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Web-based System On Pregnancy - Giving Birth (Sistem Kehamilan - Kelahiran Anak)

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Abstract

From pregnancy until childbirth, it is always a process of tiring, joy and tribulations. Pregnancy women experience great changes in mentality and physically. They need to learn the related information to minimize their anxiety, to help them discover the danger signs earlier and to be well prepared for their baby's arrival.

In Malaysia, pregnancy women tend to get the knowledge on pregnancy from their relatives, friends and books. An online system on pregnancy - giving birth could be developed as a good alternative of their information resources. The information could be delivered via World Wide Web (WWW). With the features of easy accessibility, interactivity, existence of multimedia elements (audio, video, animation, text and graphic), user friendliness and published in Malay version, Malaysian pregnancy women could learn the related knowledge in a better way.

Several surveys and research had done to do assessment and review about the system. System Development Life Cycle used as a methodology of the proposed project.

The data to be presented includes text data, still images, video data and animated graphics. This information would be refined by expertise. A database also has to be implemented for storing the data that would be retrieved for display and captured from users.

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Project Overview

Chapter 1 Project Overview

1.1 Introduction

As we enter the 21st Century, it is becoming more apparent that the focus will be information on demand. Computers have changed the way we live and the way we work. Information technology is growing rapidly. Globalisation has brought a new era to human races.

Information technology (IT) is a hot topic in this few years in Malaysia as our nation is moving towards the knowledge-based economy. The rise of the younger generation's population, higher education level of people and afford of buying a PC enhanced the growth of the Internet users in this country. In the next five years, it is predicted that the Internet users' population will be increasing by 20% every year. To ensure that every residents has the equal chance to access information, government's goals are providing 500 fixed phone lines per thousand people, 250 Internet users per 1250 people and 10 broadband per thousand people in five years times.

In Malaysia, Internet trend has brought to the emergence of local web site. Different web sites show their own features and functions. Malaysia is still in the early stage of the web development.

The worldwide workforce is experiencing an increase in women in employment. Recently, many Internet companies in Asia build up web sites, which target on women. Amount of female Internet users is increasing especially in US; it had achieved 50% of the Internet users' population. Whereas the sum is growing continuously in Asia countries, including Malaysia.

Nowadays, there is variety information available in the web, including medicine knowledge. IT has played an important role in conveying the knowledge of medicine and health.

This proposed project is to develop a web-based system on pregnancy - giving birth. It will emphasize the existence of multimedia elements.

Currently, screens displayed through the web are always text-based and pictures. Audio and video are seldom available due to the Internet bandwidth constraints. Emergence of broadband technology will break the bandwidth barrier and bring the web technology towards a new era. Multimedia web pages would soon be dominates the web.

1.2 Problems Definition

There are a lot of reading materials about pregnancy such as books, magazines, articles in newspaper and handbooks. Undeniable, some of these materials are written very comprehensive and in detail. However, since this information is mainly in text-based, it might reduce the desire of learning the related knowledge for some of the pregnancy women. In addition, there is insufficient coverage and limited write up about pregnancy especially in an article. Moreover, books sold in the market are not cheap.

For electronic media, there are limited TV or radio programs about pregnancy available in Malaysia. Moreover, these media have their own limitations in distributing information on pregnancy.

During a survey in videotape or VCD shops in Klang valley, videos and VCDs about pregnancy were seldom found. In addition, those found are mainly in English version.

As time is valuable today especially in this competitive society, people are always anticipating getting useful information in an efficiency way. In Malaysia, they are more and more working women. Definitely, the easy accessible of information is essential nowadays to shorten the time for searching information. For pregnancy women, this proposed project would cater their needs. They can easily, on their own comfort at home or anywhere with the availability of the Net services, to view the information at anytime.

There are many web sites about pregnancy available nowadays. Unfortunately, majority of them is in English version. This may caused some difficulties to those who are not literate in English to learn the knowledge on pregnancy through the web.

Hence, a web-based system in Malay version is essential for Malaysian pregnancy women. This would be a good alternative for them to learn the related knowledge.

1.3 Project Scope

The project will focus on developing a web-based System on Pregnancy - Giving Birth. This system will show all the information in attractive screen display. This would be a multimedia web page consists of five elements that is audio, video, animation, graphic and text.

This web page would cover the knowledge of during pregnancy until the newborn baby is 1 year old. Basically, the system is developed for all the pregnancy women in Malaysia including who do have or do not have pregnancy knowledge. Nevertheless, all the Internet users especially who are willing to know more about pregnancy such as pregnancy women's families, future moms-to-be or others people, can view this web page. All of the information displayed would be reliable and refined by expertise.

This system would only published in Malay version. On the other hand, the proposed project would not cover all types of information about pregnancy (Refer to Figure 3.1, pg. 48).

1.4 Project Objectives

The broad objective in designing the system is to make the information about pregnancy available to the general public, through the medium of the WWW. The user should has several options as to how the information is viewed, to browse casually through the material; to systematically study the information in a logical manner; or to rapidly search the material for specific information required.

The aim of this project is to build an interactive information system, which can educate or guide the mother-to-be during pregnancy and after the childbirth.

The objectives of the proposed project are as listed below:

(a) To online display information about pregnancy

It gives another best choice of the information resources about pregnancy to Malaysian pregnancy women. Information on the reading materials, videotape or

others would be selected and combined into the system. Users can shorten the time for searching the information every where. It is especially benefit the one who is fighting for time.

(b) To educate Malaysian pregnancy women in an interactive way

Since it is a multimedia web page, it allows a user to learn the information in more attractive, fun, interesting and interactive manner without have to read books or journals. With the understanding of pregnancy and baby care, pregnancy women or mothers' anxiety would be minimised.

(c) To convey the knowledge of pregnancy to general public

Sometimes people have poor understanding of the needs of a pregnancy woman. Moreover, some of the married women or young ladies are anxious to be a mother. This web page, with the features of easy accessibility, provides a better way to them to know more about pregnancy and clarify their misunderstanding.

(d) To avoid the gap of information acquirement among the English-literate and the non-English-literate

Since information displayed on the web are mainly in English, with the available of this system in Malay version, those who are English-literate or non English-literate have the equal chance to learn or gain the knowledge about pregnancy.

(e) To meet the demand of more variety in local web sites

Malaysia is still in the early stage of the web development. Existence of this web site would make more variety in Malaysian-made web sites.

1.5 Strengths and Limitations

1.5.1 Strengths

The project could be accomplished with these strengths as listed below:

- The system is through one of the best telecommunication media to user. The information can be spread to all around the world widely and rapidly. Information can be conveniently and easily retrieved in anywhere around the world.
- Compared to the traditional web pages, this multimedia web page would display all the information in an attractive way. Video and audio probably would be put in to increase its attractiveness.
- The information displayed would be reliable since it would be refined by expertise.
- The information would be well organized and displayed systematically. User can retrieve the related information efficiently.

1.5.2 Limitations

The system's limitations are as listed below:

- The web page would be published in Malay version only. It is developed for Malaysian pregnancy women especially for them who do not know English very well. Thus, the information would not be understood by those who are not Malay-literate especially the foreigners.
- The information displayed would not cover all the information about pregnancy. Only information that is categorized as important and essential would be put in.

- Security issues not in emphasized because everybody could access the web page through the web.
- This system is an alternative of information resources on pregnancy, not a substitute for the role of a doctor.

1.6 Importance of the project

Motherhood is always a time of joy, tiring and tribulations. Maintaining a positive mental attitude towards their coming child is very important - both for the mother-to-be as well as their child. Understand pregnancy women anxiety, fears and joy, this proposed project is to be developed as comprehensive as possible to provide guidelines to Malaysian pregnancy women.

1.7 Project Expected Outcomes

As proposed, the outcomes of the project would be a web-based system on pregnancy - giving birth. The functions or modules expected in this project are as the following:

(a) Online information on during pregnancy

For instances, symptoms of pregnancy, fetal development, pregnancy women's nutrition, health and common ailments.

(b) Online information on giving-birth

For instances, childbirth method and stage of childbirth.

(c) Online information on after giving-birth

For instances, childcare guide, baby's health, breast-feeding and bottle-feeding.

(d) Story sharing section

Pregnancy women, mothers or even their families can share their experience and stories about pregnancy and childbirth using this section.

(e) Frequently Asked Questions (FAQs)

FAQs would be put in this section.

(f) Experts corner

This corner allows users to ask expertise question. The answer and the question would be displayed on this corner.

(g) Games

This section is for users' fun only to make the web page more interesting.

(h) Feedback/ suggestion

The project allows users to make suggestions or comments through the e-mails. Their suggestion and comments can be composed and sent directly. A dialog box will be provided for messages writing.

Chapter 2 Literature Review

2.1 Introduction

Literature review covers comprehensive review of all literature relevant to the project. The literature review of the project is divided into 4 parts:

- Pregnancy review
- Existing systems review
- Methodology review
- Internet usage review

Literature Review

Chapter 2 Literature Review

2.1 Introduction

Literature review covers comprehensive review of all literature relevant to the project. The literature review of the project is divided into 4 parts:

- Pregnancy review
- Existing systems review
- Multimedia review
- Internet review

2.2 Pregnancy Review

2.2.1 Questionnaires

2.2.1.1 Objectives

The basic aims and objectives of the questionnaires are:

- To identify information needs of Malaysian pregnancy women;
- To find out how the pregnancy women acquire the related information;
- To identify a web page's features that would attract a pregnancy women;
- To find out the trend of Internet usage among pregnancy women

2.2.1.2 Sample Characteristics

The questionnaires were distributed among 50 pregnancy women or mothers from different races, which are mainly in Klang Valley. Among the sample

respondents, 40% are pregnancy women whereas 60% are women who do have maternal experience.

Out of the total sample respondents, 48% belonged to the age group of 20-30 years followed by 40% from the age group of 31-40 years; only 12% of the respondents are within the age group of 41-50 years.

Among the total sample respondents, 56% have educational level until secondary school followed by 30% are undergraduates or graduates; 8% have only primary school educational level and, only 6% were college or institution students.

On the other hand, 30% of the respondents are workers in the private sectors followed by 26% as a housewife; 22% are employees of government and 16% are university students. Only 6% operate their own business. Excluding the housewives and university students, the sum of working women is 58% of the total respondents.

2.2.1.3 Limitations

The following limitations are identified:

- These questionnaires were only distributed to pregnancy women or mothers within the age group of 20-50 years. (by age)
- The respondents are mainly from Klang Valley. This study covers only a specific area in Malaysia. (by geography)

2.2.1.4 Results

The data from the 50 questionnaires were classified and drawn in graphs for the purpose of analysis and interpretation.

Main Sources of Information on Pregnancy

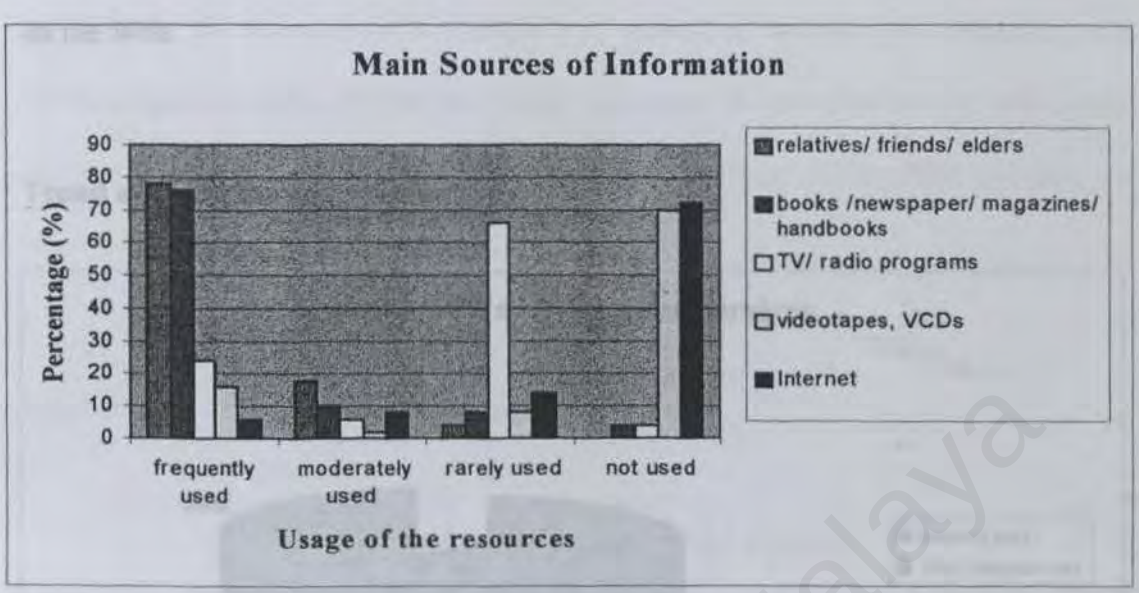


Figure 2.1 Main Sources of Information on Pregnancy

Figure 2.1 shows that 78% of the women are frequently get the advice from their relatives, friends or elders especially their own mother, as their main source of knowledge on pregnancy. Malaysian pregnancy women tend to depend on this kind of the information resource.

Books, magazines, newspaper and handbooks are widely used as the prime source of information as 76% of the total respondents frequently used these reading materials to fulfill their information needs.

On the other hand, 24% frequently acquire the knowledge from television's or radio's broadcasting. The majority of the respondents (70%) never gain the related knowledge by watching VCDs or videotapes. This is probably due to the lack of this kind of references in Malaysia. 72% stated that they do not use Internet at all to meet

their information needs. This could be due to not familiar with searching information on the Web.

Trend of Using the Internet Services

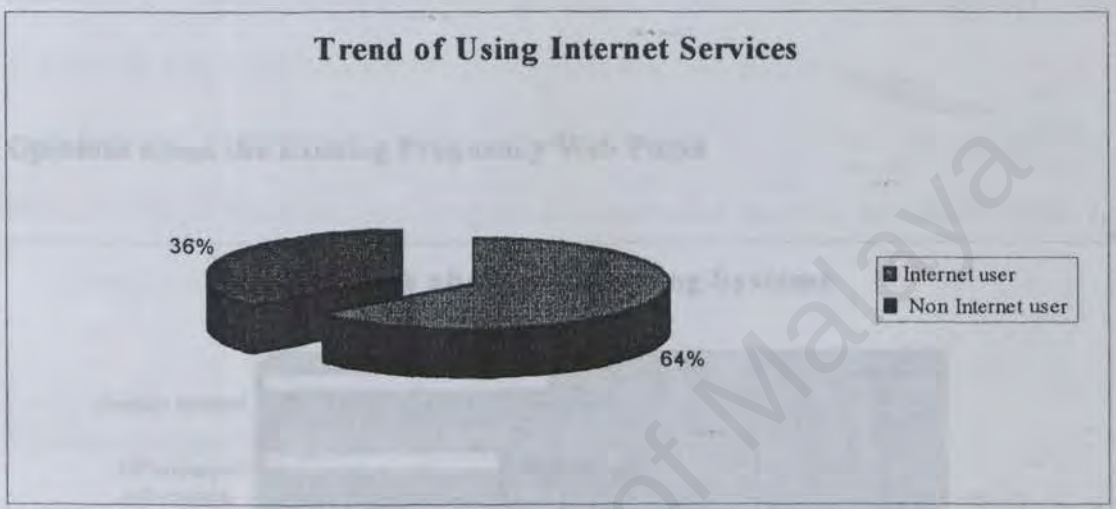


Figure 2.2 Trend of Using Internet Services

Figure 2.2 shows that 64% of the respondents, which mainly have higher educational level background said that they know how to use the Internet services whereas most of the rest that do not know how to access the Internet expressed their willingness to learn the skill. Obviously, with the awareness of the advantages or importance of having the Internet skill and with the growth of the information technology in Malaysia, the Internet user will be continuously growing in this few years.

Among the 32 Internet user, some of them (18) ever visit the related web site to gain the knowledge on pregnancy whereas 14 of them never get the related

information from the Web. Among the 14 women too, 3 of them stated that they do not aware of the existence of this kind of web sites; 7 of them are not interested and 4 of the respondents do not feel that there is a need to visit this kind of web page. Internet users especially female usually read or compose e-mail when they are on-line.

Opinions about the Existing Pregnancy Web Pages

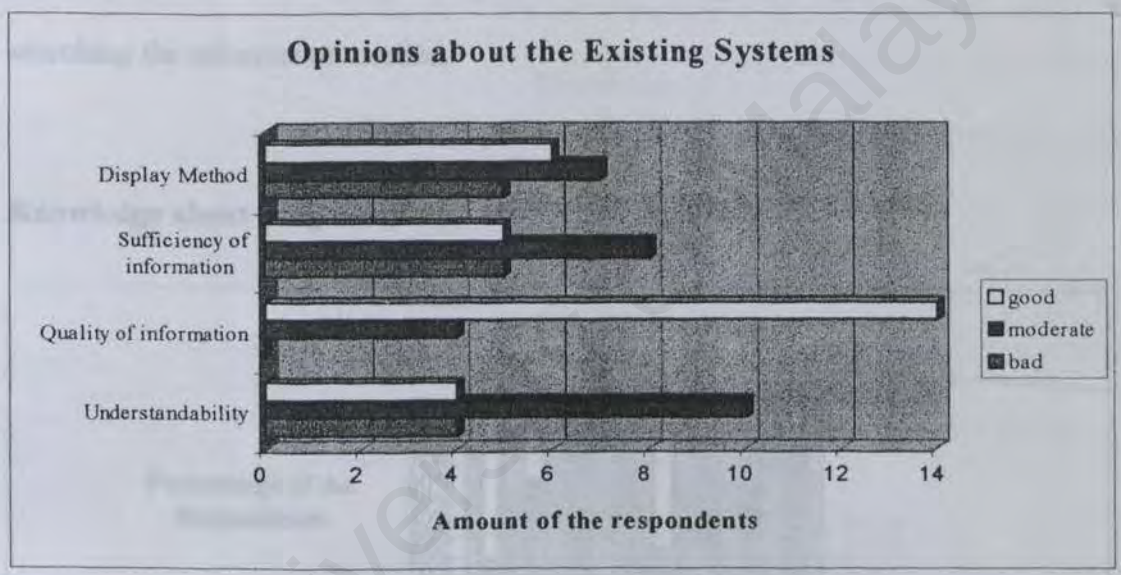


Figure 2.3 Opinions about the Existing Systems

18 of the respondents who ever visited the related Web site gave their opinions about the existing systems. **Figure 2.3** shows that 10 respondents have moderate understanding of the information displayed. This may due to the information displayed is mostly in English version, and some of the terms used are not familiar to them.

There are 11 respondents stated that the quality of the information such as reliability is quite good. The pregnancy women do not have many suspects on the information provided.

8 of the respondents stated that the Web page contains moderate sufficient information to help them to overcome problems encountered during pregnancy. This is probably due to the information do not meet the user requirements.

Most of them felt that the Web page design is moderate in quality. This probably due to the Web page design is not interesting and they faced difficulties in searching the information needed.

Knowledge about Pregnancy

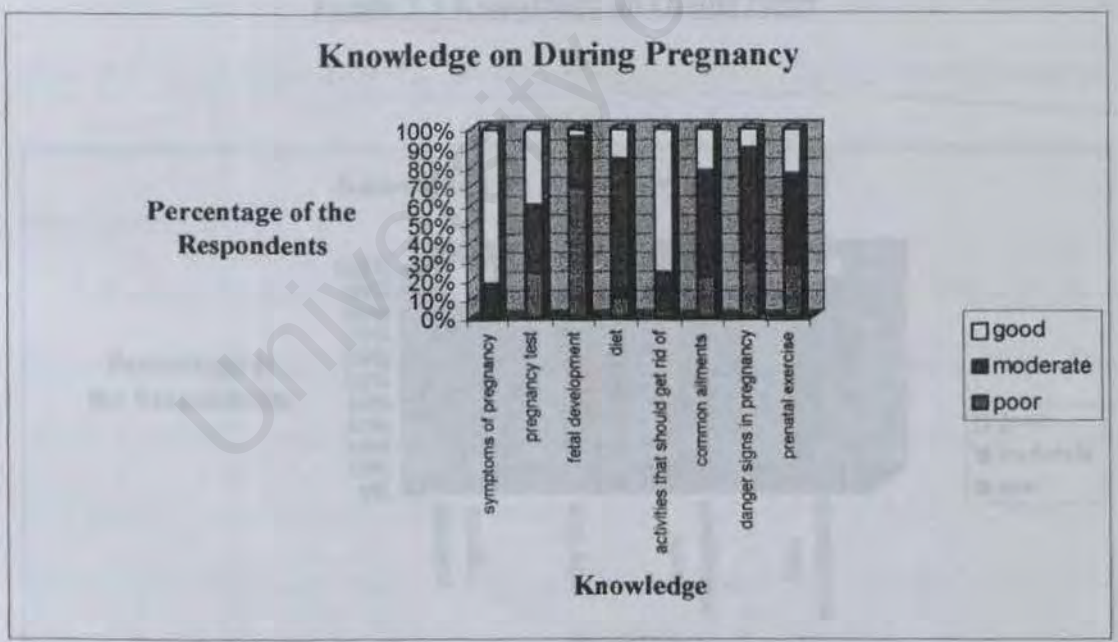


Figure 2.4 Knowledge on During Pregnancy

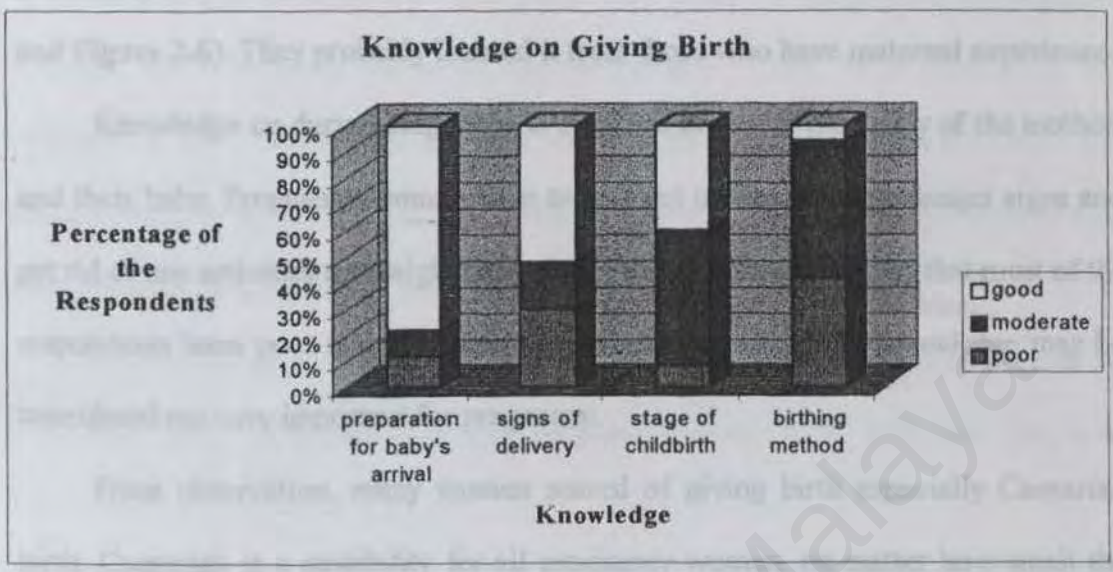


Figure 2.5 Knowledge on Giving Birth

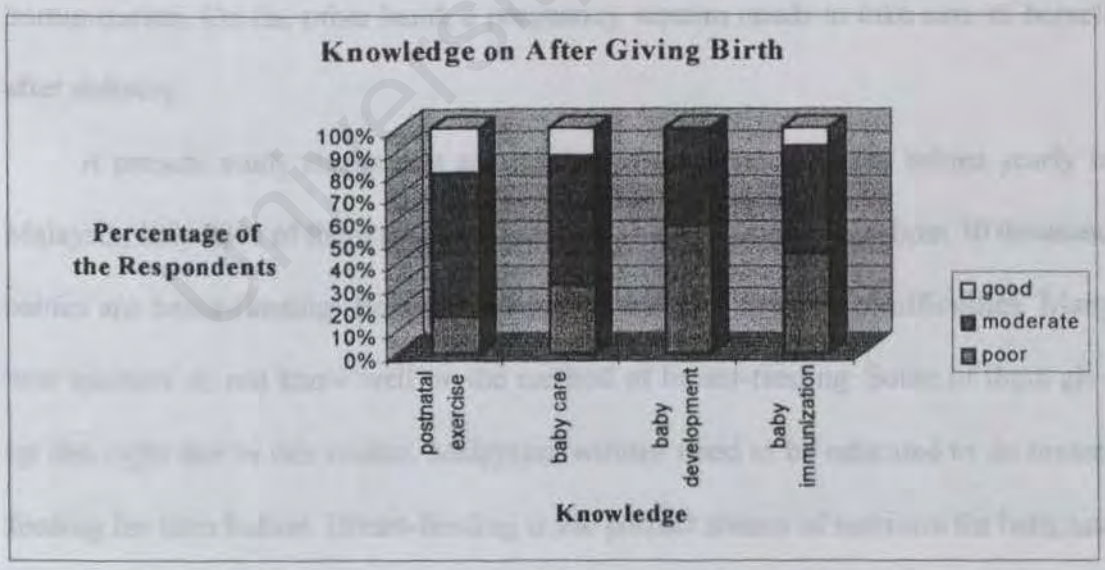


Figure 2.6 Knowledge on After Giving Birth

Basically, the respondents said they have moderate knowledge on during pregnancy, on giving birth and after giving birth. (Refer to **Figure 2.4**, **Figure 2.5** and **Figure 2.6**). They probably learned it from those who have maternal experience.

Knowledge on during pregnancy is essential to ensure the safety of the mothers and their baby. Pregnancy women have to be alert on any possible danger signs and get rid of any activities that might harm their baby. **Figure 2.4** shows that most of the respondents have poor understanding of fetal development. The knowledge may be considered not very important for pregnancy.

From observation, many women scared of giving birth especially Caesarian birth. Caesarian is a possibility for all pregnancy women, no matter how small the changes. They need to be educated to be well prepared for the arrival of their baby.

After childbirth, mothers have to take care of their baby very well. They should have the knowledge such as how to bath the baby, baby's development and immunization. On the other hand, a pregnancy woman needs to take care of herself after delivery.

A present study shows that among the 40 thousand newborn babies yearly in Malaysia, only 28% of them are breast-feeding. This indicates that about 30 thousand babies are bottle-feeding. Breast-feeding is sometimes fraught to difficulties. Many new mothers do not know well on the method of breast-feeding. Some of them give up this right due to this reason. Malaysian women need to be educated to do breast-feeding for their babies. Breast-feeding is the perfect source of nutrition for baby and can make the baby smarter, prettier, and protects against many serious diseases that can develop later.

Others

Most of the respondents (36) said that they prefer the information displayed in a simple, that is no much text-based, and comprehensive way. 46 of them prefer the existence of the elements like video or audio in the Web page. They also hope the features such as interesting pictures available. A few of the respondents (4) said that they anticipate availability of games in the Web page.

Most of the respondents (38) felt that there is a need to learn the knowledge of pregnancy before a woman is getting pregnant whereas 12 of them said that it is unnecessary to do that.

On the other hand, 36 of the total respondents stated that their husband do not have sufficient knowledge on their pregnancy. Actually, supportive and encouragement from their husband is important to help them ease the burden, no matter in physically or mentality.

2.2.2 Interview

An informal interview was conducted face-to-face with a nurse from Klinik Kesihatan Titi. The nurse named Umi Kalsom has almost 12 years experience in maternal care, ever-worked in Hospital Besar in Kelantan before she came to the clinic. She knows much about the Malaysian pregnancy women.

Malaysian pregnancy women, like others patients in Malaysia, have the benefit of getting free or cheap treatment in government hospitals and clinics. When they are pregnant, normally, they need to see doctor once a month until the fetus is 28 weeks. After that, frequency of visiting will be increased to once per 2 weeks until the fetus

is 36 weeks. Then, once a week visit is necessary until the baby born. Ultrasound normally has to be done between 18 to 20 weeks of the fetus. Each of them has a record card for the record of every check up or tests on folic acid, blood pressure and urine. They can bring along the card to do the check-up in any government clinic. If they have forgotten to do check-up for quite a long time, nurses will drop in their house to pay a visit.

Normally, pregnancy women are looking happy. They anticipate the giving-birth of their baby with the greatest happiness. Madam Umi said, they seldom have the sign of worried or sadness when they came to pregnancy check-up.

There are free distributed handbooks about the pregnancy knowledge printed by government. However, the quantity of this kind of handbooks reduced in the recent years. Nevertheless, that is not the main information resource. The pregnancy women, either educated or non-educated, normally have basic knowledge about pregnancy. This information mainly gained from their mothers, mothers-in-law and friends. They know what shall do and what have to get rid of. Sometimes, they will get the advice from nurses and doctors during their prenatal checkup.

Madam Umi felt that it is good to have a web site for Malaysian pregnancy women as an information resource. This will help pregnancy women to learn more about pregnancy in details. With these knowledge, they will be more understand their situation and take an appropriate action to overcome the problems that may be occurred. This will help to ensure the safety and healthiness of the moms-to-be and the baby.

And also, the proportional of doctor relative to patients is low in Malaysia. Especially in government hospital, doctor's works is quite a heavy load. If a

pregnancy woman has essential knowledge about pregnancy, certainly this would ease the burden of doctors although the normal checkup still has to be carried out.

2.3 Existing Systems Review

2.3.1 Objectives

The objectives of the existing system review are:

- To avoid the same mistakes occurred in the web page development by studying the weaknesses of the existing systems;
- To put in the good features in the Web page design by studying the strengths of the existing system.

2.3.2 Studying the Existing Systems

The web pages design are basically justified by using the following guidelines:

- Downloading time.
- Image used: Appropriate? Labeled? As a link? Compared to text?
- Colour: background/ text contrast, cultural or political significance, aesthetics
- Language: clarity, gender
- Site layout: clear, easy to navigate?
- What is the purpose of this site? Does it reach the target audience?
- Is the information reliable and current?
- Would user visit this site again? Or recommend it?

The studies were focus mainly on the web pages below: -

Baby Center

URL - http://www.babycenter.com/

This is a well-known Web site on pregnancy. This large system shows that there is much effort and time spent on the development process. People can get rich-detail information on pregnancy and baby care in this Web site. They can even do e-shopping to buy the related products. With articles, news, chat rooms, experts' corner and more, this site kept people busy surfing for hours. It is more interactive. There is a dual communication among the users, not only conveys the knowledge.

However, some people especially who are not frequent Internet surfer may lost themselves in this huge information sea when visiting this Web. Furthermore, multimedia elements are seldom found in this Web site. Information is mainly in text-based and some people may feel bored to read it up.

StorkNet - The Pregnancy and Parenting Online Community

URL - http:// www.storknet.org/

Like Baby Center, this is a large information system. However, this Web site has its own advantage. There is a site map provided to lead user to browse the page. People may get the required information easily without have much tries to visit the hyperlinks.

There is also a word guessing games available in this Web site. The Web page does not look complicated.

Panduan Ketika Hamil

URL - http://users.50megs.com/hamil/

This web site is designed especially for Muslims since there are advice from the viewpoint of al-Quran. The target is future moms-to-be and fathers-to-be. This informative pages cover the basic knowledge about pregnancy and provide a corner for fathers-to-be. However, it does not cover the information about baby care.

Many cute and animated pictures are embedded in the web page. The pictures used as a link to other pages. It gives a user the impression of comfortable to look at with the feature of no much text and has consistent background design. The web page design is not complicated. Users can retrieve the information easily.

However, a user has to go through a few steps or mouse-clicks before they can access the information needed. This web page also does not provide sufficient information about pregnancy. It also does not provide an interactive way for the user to learn the knowledge.

E-Pregnant Mall.com

URL - http:// millenium.fortunecity.com/rintintin/281/

This web page is the pioneer Web page in Malaysia that providing the pregnancy topic. The motivation of the web page development is to make more Malay language resources in the web. The first impression given when visiting this web page is that it is not nice to look at. User might not have desire of continuing browse the hyperlinks. It is a good example of bad web page design.

Many spelling errors could be found in this web page, the font of the text is inconsistent and the colour used is not suitable. It seems like using the old method of cut and paste technique. Moreover, some of the terrible photographs are also embedded. The user might not visit this site again due to the above reasons.

2.3.3 Results

This review process can be summarized as below:

Features of local Web page:

- Not provide sufficient information
- Show no much effort to put in
- Mostly are informative page
- Web page design need to be improved

Features of foreign Web sites:

- Provide rich-detail information
- More interactive
- More functionality
- Multimedia elements seldom found
- Search engine is available

2.4 Multimedia Review

2.4.1 Introduction

Multimedia is more than one concurrent presentation medium (for example, on CD-ROM or a Web site). Although still images are a different medium than text, multimedia is typically used to mean the combination of text, sound, and/or motion video.

Multimedia can arguably be distinguished from traditional motion pictures or movies both by the scale of the production and by the possibility of audience interactivity or involvement. Interactive elements can include voice command, mouse manipulation, text entry, touch screen, video capture of the user, or live participation.

Multimedia tends to imply sophistication in both production and presentation than simple text-and-images. Multimedia presentations are possible in many contexts, including the Web, CD-ROMs, and live theater.

For multimedia Web sites, popular multimedia players include MPEG, QuickTime and Shockwave.

2.4.2 Multimedia Project Development

The first and most important considerations in any multimedia project are

- What is the objective of the project?
- Who is the intended audience for the final products?

The intended audience will determine amongst other things the minimum hardware requirements of the delivery computers, and this in turn will determine a host of other technical production parameters. The purpose of the project will impose certain requirements on the features that must be delivered by the software, including responsiveness/ speed, complexity of interactivity, animation, graphics, and performance of digital audio and video. Other requirements will be known only to the project creator, such as level of technical ability or aptitude and skill available amongst the developer, availability of technical support and training, project size, budget, and timeliness for completion.

Most multimedia projects require extensive media preparation; nearly always the time spent in preparing media for use vastly exceeds the time spent on actually assembling the program.

2.4.3 Authoring Metaphors

There are many different authoring metaphors and approaches. Exactly which is best depends on what user is creating and how user is delivering it to the end user. Here are a few common issues and ideas:

Pages

A few authoring systems use a page metaphor: they let user create discrete units (pages) of information/interaction that are linked together to form a sort of "book."

Recently, the page metaphor has become even more popular because it is the primary one employed on the Web.

Flowcharts

Many authoring systems employ a flowchart/ timeline metaphor: they let user assemble materials into a sequence, as if user were creating a sort of "movie." This metaphor can be useful for a project that has a definite starting point, path, and ending point, such as a presentation, animation or game.

Icons

Most authoring tools use icons in one form or another. An icon is a pictorial representation of an object, container or process. An authoring system may contain icons for text, buttons, pictures, etc.; often, clicking on an icon lets user then modify the item it represents.

Icons help user visualize the content of a project, and they can be easy to manipulate for simple projects. However, if the icons grow too numerous, they become confusing. Icons are not substitutes for programming.

Programming

Several systems offer a programming approach to authoring. Programming refers to a series of explicit instructions that the computer performs.

In general, programming is more difficult than visual authoring with pages, flowcharts and icons. The main advantage is programming lets user control the

detailed aspects of the operation of a project. The main disadvantage of programming is more time consuming.

Some authoring tools offer only icons; others offer only a programming language. A few systems let user use either approach; user might see it described as "visual authoring plus available programming." In general, an authoring system with both approaches gives user the flexibility to create almost anything, and helps user maximize user productivity.

Programming languages come in two flavors: proprietary and standard. A proprietary language is unique to that system; a standard language is a version of a popular one, such as Visual Basic or C. An authoring system vendor can tune a proprietary language to match user needs.

2.4.4 Authoring Tools

While having the proper equipment and infrastructure is necessary to distribute and deliver data, ultimately, it is the content that determines whether a project is successful. In other words, content is king.

The creation of content is a mixture of art and science, especially when it comes to multimedia content. The developer needs to have a strong understanding of the technical characteristics and features of the various digital media types. They should possess a good foundation in design principles to effectively communicate the information and message to the intended audience.

Multimedia content is a very effective means of communication because by using information in the form of text, images, sound, video and animation, the message becomes much more natural in communicating with one another.

Multimedia authoring allows the author or developer to choreograph and sequence the media to best tell the story.

An important aspect to authoring is interactivity. Interactivity is the heart of any multimedia application because it gives the user the power of choice. The ability to embed interactivity in an application is the factor that makes multimedia so important today. With interactivity, users can decide on their own how to navigate their own pace. Interactivity gets the user involved in the application.

When decide to develop a multimedia application, the most important stage is the planning stage. It is in this stage where the objectives, goals and strategies are defined and communicated to the person or persons who will be developing the application. Storyboarding is an effective method of showing the progression of the application. Determining the type or types of media that will be necessary to communicate the content as well as the best approach in getting these different media types should also be discussed and be decided upon.

Choosing authoring software will depend greatly on the developers needs, skill level and preference.

2.4.4.1 Criteria for Choosing Authoring Tools

In the multimedia development process, there are many decisions to consider: what media elements to use, what hardware system to purchase, what types of

interactive features and navigational links to include, and what delivery and distribution systems to employ.

The entire multimedia design and development process centers around the authoring tool that is used to house all the media elements and incorporate interactivity. The type of authoring tool that is chosen will determine the type of final application that is produced.

A good authoring tool must have:

- A good set of graphics and text-editing features
- Extensive support for importing all of the externally created media types.
- Synchronization and integration functions to enable the designer to sequence, link and/ or script the final interactive application effortlessly.
- Capability to import a variety of media files into the program.

The task of developing multimedia applications using programming languages and hard coding systems was tedious and time-consuming.

An authoring tool must be able to allow for interactivity to be added to all the media elements. These interactive features can include simple navigational links like buttons, hypertext or hypermedia and even more complex interactivity such as tracking and scoring functions.

The amount of time needed to get comfortable with an authoring package can hugely influence the development time.

2.4.4.2 Popular Authoring Software

Some of the popular authoring software are as listed below:

Flash

Macromedia Flash is the solution for producing and delivering high-impact Web sites, as well as resizable and extremely compact full-screen navigation interfaces, technical illustrations, long-form animations, and other dazzling site effects. Graphics and animations anti-alias and scale based on the viewer's screen size, providing high-quality viewing.

Flash uses vector graphics technology. Unlike bitmapped images that are optimized for a single resolution, vector images can adapt to multiple display sizes and resolutions. Unlike bitmapped images such as GIFs and JPEGs used on the Web today, vector images—graphics, charts, maps, and animations—fit into compact, efficient files that speed over the Web. Flash files can play back with the Shockwave Player or Java.

Flash 4 enables Web designers to import artwork from their favorite bitmap or illustration tools, apply transparency, create morphing effects, add interactivity and sound, and animate them over time. Flash content is then saved and published as a Flash Player file optimized for Web delivery.

If none of these players suits a viewer's needs, the Java player plays Flash content in any Java-enabled browser.

Web users with Intel Pentium or Power Macintosh processors can download Flash Player to view Flash content, which performs across multiple browsers and platforms. Flash is lauded for being one of the Web most accessible plug-ins. According to an independent study cited by Macromedia, 89.9 percent of Web users already have Flash Player installed.

Director

Director used to create a variety of interactive multimedia productions, including business presentations, Web content (with Macromedia Shockwave Player or Java), interactive advertising pieces, kiosks, and CD/DVD titles and games. Director combines graphics, sound, animation, text, and video to create streaming, multi-user, interactive Web content that is easy to deploy for CD-ROM, DVD-ROM, and the Web.

Director is a frame-based authoring tool that uses a stage metaphor to help the user author an application. Interactivity can be added into Director applications by using an internal language called Lingo. It is a long-term investment in learning Director. Mastering Lingo is a lifelong pursuit.

Fireworks is the perfect mate for Director. Macromedia Flash and Director can be used together to create the most feature-rich Web sites around.

Dreamweaver

Dreamweaver allows the developer to create impressive Web pages and it is able to incorporate interactivity and simple animation through the use of behaviors.

Authorware

Macromedia Authorware has 15 icons that can be used to develop interactive multimedia applications. It is the leading visual rich-media authoring solution for creating Web and online learning applications.

Fireworks

Macromedia Fireworks 3 brings efficiency to Web graphics production. Buttons, animations, and page comps can be quickly created. Everything remains editable, including files from leading graphics applications. Production time can be saved. Fireworks code could be integrated seamlessly into Macromedia Dreamweaver and other leading HTML editors. It lets developer script the entire application to automate workflow.

Freehand

Macromedia FreeHand is the professional solution for designers publishing for print and Web, offering sophisticated illustration tools, time-saving productivity features, and tight integration with the award-winning family of Macromedia Web publishing software, including Macromedia Flash. Developer can create eye-catching illustrations, logos, graphics for Macromedia Flash, site storyboards, and design-intensive documents in the unique design and layout environment of FreeHand 9.

2.4.5 Video

Because multimedia data (specifically video and images) require efficient compression techniques in order to be stored and delivered in real-time, video and image compression is a crucial element of an effective multimedia system.

Delivering video via the web requires some compromises and some clever engineering:

- Picture size.

Typical web-based videos use a quarter or a sixteenth of a screen.

- Frame rate.

  A normal television picture delivers 30 full pictures per second. Most computer video cuts this down to 15 or 10 or even fewer.

- Compression.

  A television picture includes a lot of redundant information. Compression uses fancy math to avoid sending the same information again and again, compressing the data with varying amounts of image degradation and the introduction of artifacts.

- Quality compromises.

  A few other parameters are sacrificed to the bandwidth limitations, such as video noise and color fidelity.

Applications that demand higher quality delivery are possible by using advanced data channels such as high-bandwidth local area networks, satellite links, etc.

There are many compression and video delivery schemes in use. MPEG is extremely common because it is highly standardized and has excellent performance.

There are two ways to view video on the web:

Download and play

The first is to simply download the video from the web site. It appears as a file on user's hard disk. Then user starts a video player application and opens the file. The video plays in a little window -- but not until after the entire file has arrived.

The advantage of download-and-play is that the quality is pre-determined. Changes in line speed may delay the download but they won't cause fluctuations in frame rate, audio dropout, etc.

Streaming

Streaming multimedia is making the Web more like TV. Instead of having to download a multimegabyte file before user can play it, a streaming file can start to play right away. Popular streaming formats for moving pictures include RealVideo and Vxtreme's Web Theater.

When a link is clicked, an application program on the user's hard disk starts. It begins loading in the file from the remote web site. But instead of waiting for the whole video to download, it starts playing shortly after the download begins. In other words, it starts playing the video as soon as the first few seconds of it have come across the link and continues downloading the rest of the video while it plays.

A streaming video player is required to view streaming video. The advantage of streaming is that user can view the video while it downloads. This is a big advantage, especially with videos that would take hours to download entirely.

A disadvantage of streaming video is that its quality is dependent on the data transmission channel. Streaming software adjusts itself to the data rate as it plays, dropping as many frames as it has to in order to keep playing.

2.5 Internet Review

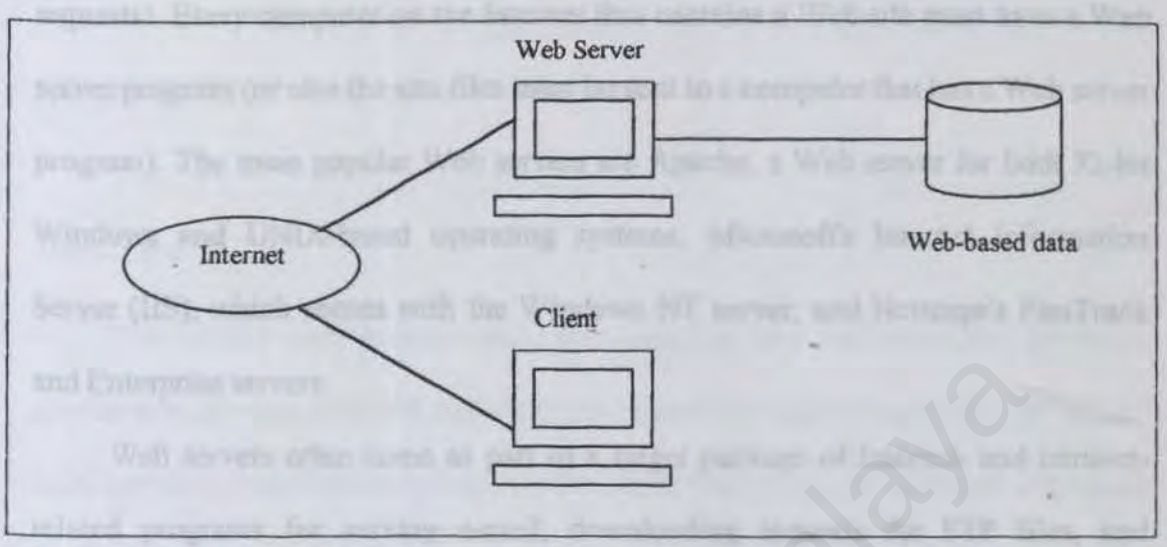


Figure 2.7 Configuration for Web use

2.5.1 Introduction

The Internet is the global associations of computers that carry data and the exchange of information possible. The World Wide Web is a subset of the Net - a collection of interlinked documents that work together using a specific Internet protocol called HTTP. Web pages can be exchanged over the Net because browsers and Web servers both understand HTTP. Everyone who uses the Net shares bandwidth - the data-carrying capacity of a network. Web pages are particularly bad bandwidth hogs because they are loaded down with graphics and multimedia.

Web Server

A Web server is a program that, using the client /server model and the World Wide Web's Hypertext Transfer Protocol (HTTP), serves the files that form Web

pages to Web users (whose computers contain HTTP clients that forward their requests). Every computer on the Internet that contains a Web site must have a Web server program (or else the site files must be sent to a computer that has a Web server program). The most popular Web servers are Apache, a Web server for both 32-bit Windows and UNIX-based operating systems; Microsoft's Internet Information Server (IIS), which comes with the Windows NT server; and Netscape's FastTrack and Enterprise servers.

Web servers often come as part of a larger package of Internet- and intranet-related programs for serving e-mail, downloading requests for FTP files, and building and publishing Web pages. Considerations in choosing a Web server include how well it works with the operating system and other servers, its ability to handle server-side programming, and publishing, search engine, and site building tools that may come with it.

Web Client

The Web client is a Web browser such as Netscape Navigator or Microsoft Internet Explorer. The browser's job is to contact Web servers, receive HTML pages then interpret and display those pages.

When one types in the URL, the Web browser looks at the URL and then determines which server to contact, which directory to ask for and what specific document in that directory is wanted.

An end user can spawn a database application through the Web browser that communicates with he Web server through the Internet via hypertext transport protocol (HTTP). In the simple, HTTP is used to contact Web server.

Middle ware

The middle ware is responsible for managing communication and providing application services between the Web server and the database server. The middle ware software calls external programs or scripts that act as the transport and layout mechanism between the Web server and the database server.

The script constructs the query, passes the query to the database, and formats the outputs as an HTML page. The Web server then returns the HTML page to the Web browser to display the information to the end user.

2.5.2 Web Languages

Hypertext Markup Language (HTML)

HTML is the set of "markup" symbols or codes inserted in a file intended for display on a World Wide Web browser. The markup tells the Web browser how to display a Web page's words and images for the user.

HTML is a standard recommended by the World Wide Web Consortium (W3C) and adhered to by the major browsers, Microsoft's Internet Explorer and Netscape's Navigator, which also provide some additional non-standard codes. However, both Internet Explorer and Netscape implement some features differently

and provide non-standard extensions.

JavaScript

JavaScript is Netscape's cross-platform, object-based scripting language for client and server applications. JavaScript lets user to create applications that run over the Internet. Client applications run in a browser, such as Netscape Navigator, and server applications run on a server, such as Netscape Enterprise Server. Using JavaScript, developer can create dynamic HTML pages that process user input and maintain persistent data using special objects, files, and relational databases. Through JavaScript's LiveConnect functionality, the applications can access Java applications.

JavaScript code can be imbedded in HTML pages and interpreted by the Web browser. JavaScript can also be run at the server as in Microsoft's Active Server Pages before the page is sent to the requestor. Both Microsoft and Netscape browsers support JavaScript, but sometimes in slightly different ways.

Common Gateway Interface (CGI)

CGI is a standard way for a Web server to pass a Web user's request to an application program and to receive data back to forward to the user. When the user requests a Web page, the server sends back the requested page. However, when a user fills out a form on a Web page and sends it in, it usually needs to be processed by an application program. The Web server typically passes the form information to a small application program that processes the data and may send back a

confirmation message. This method or convention for passing data back and forth between the server and the application is called the CGI. It is part of the Web's HTTP protocol.

Active Server Pages (ASPs)

An Active Server Page (ASP) is an HTML page that includes one or more scripts that are processed on a Microsoft Web server before the page is sent to the user. ASPs or Active Server Pages is a Microsoft CGI. Typically, the script in the Web page at the server uses input received as the result of the user's request for the page to access data from a database and then builds or customizes the page on the fly before sending it to the requestor.

Like technology that allows developer to create dynamic WebPages from the server side using a scripting language such as VB script or JavaScript. It has certain built-in objects that can store and retrieve variables, get information from user-submitted forms, and get information about the server itself.

ASP is a feature of the Microsoft Internet Information Server (IIS), but, since the server-side script is just building a regular HTML page, it can be delivered to almost any browser.

2.5.3 Web Server

Microsoft Internet Information Server (IIS)

Essentially, IIS is the server software of choice if developer wants to run an ASP-based site.

IIS really shines when it comes to the handling of Active Server Pages (ASPs), pages that are generated by the Web server software using Active X scripting - usually Visual Basic Script or JavaScript code. IIS offers superior ASP-based interface to ODBC sources like Access and SQL-Server.

IIS Pros:

- **Microsoft product.**

  Since IIS is a Microsoft product, it not only has the same heavy backing as other Microsoft products, but also is integrated seamlessly into the OS itself. This means developer can do things like drag and drop files into the software for instant availability on the Web with a minimum of hassle.

- **Comes free with NT.**

  If developer do decide that NT is the best OS to use, IIS is included in the box.

- **Limits bandwidth.**

  Unlike other server software, IIS has the ability to limit how much bandwidth web pages have available.

- **Crash protection.**

  If one application running on the server crashes, the Web server and other applications continue to run, and the failed application restarts the next time a user requests it.

IIS Cons:

- **Limited to NT-based systems.**

  IIS is not available for use on non-NT systems.

- **Closed source.**

  As with NT, the source code to IIS is Microsoft's proprietary information - developer cannot get access to it to make changes. This also means that there are not many third-party developers working on improving the core software.

System Analysis & Methodology

Chapter 3 System Analysis & Methodology

3.1 Introduction

System analysis is the phase to analyze the system needs that involve the following stages:

(a) Information gathering

An integrated technique of information sought has been used to gather the related information.

(b) Technology consideration

The suitable technology and language to develop the system is identified.

3.2 Information Gathering

The development procedure starts with the data preparation. This includes preparation of text-based data, audio samples, still images, video data and animated graphics.

The data gathered on pregnancy is in various formats, including text-based data, photographs and video footage. Data preparation for inclusion in the computer application thus requires the digitization of the materials collected.

There is extremely much information about pregnancy and childbirth. The information could be acquired from the following resources:

- Library
- Hospital or clinic

- Internet

The information about pregnancy that are going to be put in the system has been divided into a few classes as shown in the **Figure 3.1**, pg 48. With the classification, it can make the information gathering process easier and facilitate the system design.

The information about the pregnancy, baby care and the knowledge on Web development also collected through browsing the Web. Books are read to get a better understand of the information needed.

3.3 System Requirements

3.3.1 Functional Requirements

The functional requirements have been discussed in Chapter 1, Project Expected Outcomes. (Refer to Section 1.7, pg 7)

3.3.2 Non Functional Requirements

The non-functional requirements are as the following:

- Maintainability

The document source files should be properly formatted for readability, including remark lines where necessary. This is for the purpose of maintainability.

- Reliability

The information should be refined by the expertise to verify its reliability. Information displayed should be risk-free.

- Understandability

  Terms used to convey the knowledge should not be difficult to understand or learn about.

- User friendliness

  Multimedia elements are embedded to make the information more acceptable and easier to learn. User should retrieve the information efficiently.

3.3.3 Development Tools

The choice of hardware and software used in a system development is very important. It has a profound impact on the cost, quality and productivity of the system.

3.3.3.1 Hardware Requirements

- Personal Computer
- At least 64 MB RAM
- At least 166 MHz processor
- 2.1 GB of free hard disk space
- 256-colour monitor capable of 800 x 600 resolution

3.3.3.2 Software Requirements

Software Consideration:

- Relevance with the system development to make the system completed on time
- Does the development tool easy to acquire?
- Does the interface of the development tools easy to be understand?

- Can the integration of the development tools with the database or other resources or others development tools possible?
- Is it easy to learn?

The software requirements for developing and implementing the system are as listed below:

(a) Network Operating System

- Windows NT Server 4.0

(b) Database

- Microsoft SQL Server

(c) Web Server

- Microsoft Internet Information Server (MIIS)

(d) Web Browser

- Microsoft Internet Explorer

(d) Authoring Tools

- Macromedia products such as Flash

(e) Web Languages

- HTML
- JavaScript
- Active Server Pages (ASPs)

3.4 Methodology

The System Development Life Cycle (SDLC) is used as a methodology of the proposed project. This can be divided into 7 sequential phases, although in reality the phases are interrelated and often are accomplished simultaneously.

Following is the description of the 7 phases that is used in this project development: -

(I) Identifying problem, opportunities and objectives

Identifying objectives is an important component of the first phase. Specific problems or opportunities are addressed. Activities in this phase consist of estimating the scope of the project, and documenting the result. This has been discussed in Chapter 1.

(II) Determining information requirements

The next phase is that of determining information requirements for the particular users involved. Among the tools used to define information requirements are interviewing and questionnaires, as discussed in Chapter 2. Questionnaires were distributed since the potential system user is general public, which is a large population. Questionnaires are suitable to collect the related information. Interviewing also used to collect the expertise opinions.

(III) Analyzing system needs

At this point in the SDLC, a system proposal that summarizes what has been found provides cost/benefit analyses of alternatives, and makes recommendation on what should be done.

(IV) Designing the recommended system

The logical design of the information system will be accomplished by using the information collected earlier. Part of the logical design of the information system is devising the user interface.

The design phase includes designing database.

The system design process establishes an overall system architecture. Software design involves representing the software system functions in a form that may be transformed into one or more executable programs.

(V) Developing and documenting software

In this stage, program coding will be done. Books, newsgroup and online tutorial would be used as the main reference. In addition, documentation for software will be developed too.

(VI) Testing and maintaining the system

Before the information system can be used, it must be tested. Maintenance of the system and its documentation begins in this phase and is carried out routinely throughout the life of the system. Maintenance involves correcting errors.

(VII) Implementing and evaluating the system

In this stage, the system will be implemented. Actually, evaluation takes place during every stage.

The important aspect of this system development is involvement of the user to ensure that it can satisfy the user needs. Users that will involved in the system development are as following:

- Expertise
- Public especially pregnancy women and mothers

Expertise involvement is necessary in the evaluation of the system so that the system is risk-free (not providing the misleading information). General public's involvement are also required in the evaluation process especially in the user interface design. Changes will be made according to the feedback from the user until user is satisfied with the system.

3.5 Project Schedule

A project timeline was planned to manage the times.

	Jun 2000				July 2000				Aug 2000				Sept 2000				Oct 2000				Nov 2000				Dec 2000				Jan 2001				Feb 2001			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Project Definition																																				
Literature Review																																				
System Analysis																																				
System Design																																				
System Coding & Implementation																																				
System Testing																																				
Documentation																																				

Table 3.1 Project Schedule

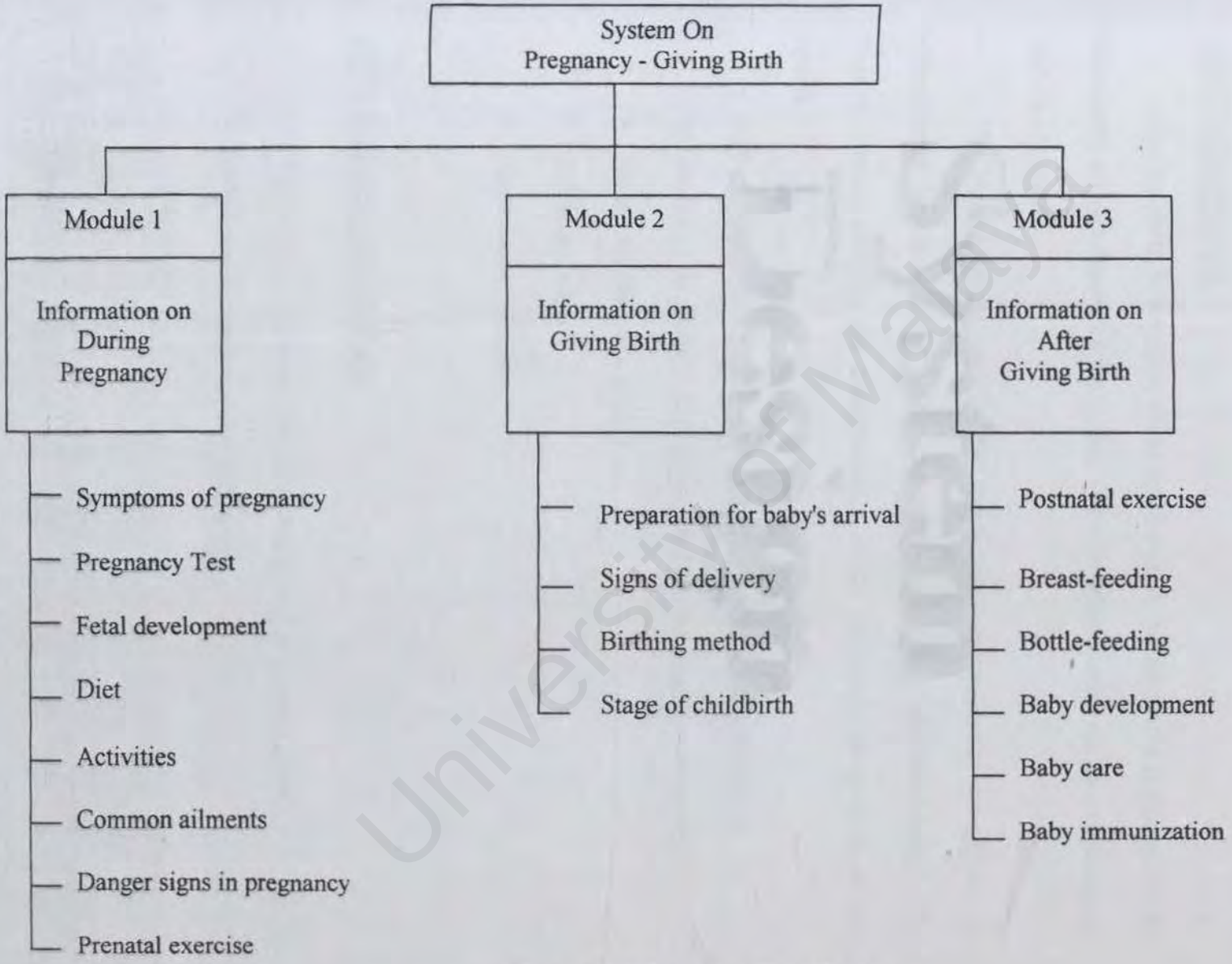


Figure 3.1 Information Classification

Chapter 4 System Design

4.1 Introduction

Design phase is the stage of system development where the requirements for the system are translated into the system characteristics to meet the user requirement and satisfaction.

The logical design describes the functional requirements of the system. Its specification [illegible] database design. The physical design specifies the characteristics of the necessary components of this system.

System Design

A prototype [illegible] accordingly.

The design of this system can be viewed from the aspects as following:

- System functionality design
- Database design
- User interface design

4.2 Functionality Design

The following are the functionality that provides to general users:

- Browsing information about pregnancy
- Registration
- Log in
- Games

Chapter 4 System Design

4.1 Introduction

Design phase is the stage of system development where the requirements for the system are translated into the system characteristics to meet the user requirement and satisfaction.

The logical design describes the functional requirements of the system. Its specification includes output design, input design, file and database design. The physical design specifies the characteristics of the necessary components of this system.

A proper design is a must to make sure the system work accordingly.

The design of this system can be viewed from the aspects as following:

- System functionality design
- Database design
- User interface design

4.2 Functionality Design

The following are the functionality that provides to general users:

- Browsing information about pregnancy
- Registration
- Log in
- Games

- Expert's corner (Asking Questions)
- Story sharing section
- Feedback

Users can switch to any functions easily and quickly. There are buttons, a navigation menu provided to link to specified functions.

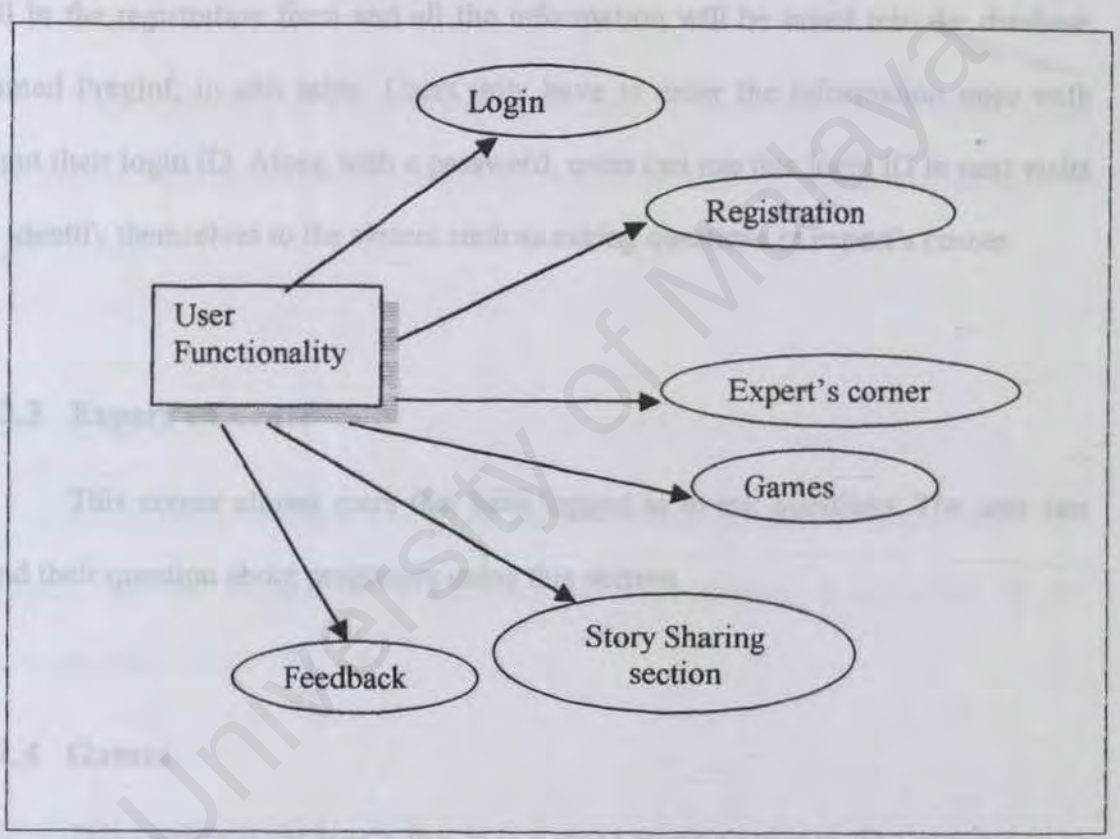


Figure 4.1 Functionalities of the System

4.2.1 Browsing Information About Pregnancy

General users are allowed to browse the information about pregnancy that published on the web page. Information that put in the web page include information

on during pregnancy, on giving-birth and on after giving-birth. Please refer to **Figure 3.1**, pg 48.

4.2.2 Registration

This function allows general users to register as a member. The user has to fill in the registration form and all the information will be saved into the database named PregInf, in *ahli* table. Users only have to enter the information once with input their login ID. Along with a password, users can use this login ID in next visits to identify themselves to the system such as asking questions in expert's corner.

4.2.3 Expert's Corner

This corner allows users that have logged in to ask questions. The user can send their question about pregnancy using this section.

4.2.4 Games

This section is for user's fun. It is a word guessing games. The purpose is to make the web page more interesting.

4.2.5 Story Sharing Section

This section allows the general users to post their experience and story to the Webmaster. Webmaster would filter out the information and make it available through the net.

4.2.6 Login

This function is to allow the users to identify themselves to the system. The user have to login before the edit their registration information and asking question in expert's corner.

4.2.7 Feedback

Users are encouraged to send their feedback to the administrator. The feedback can be a question, a comment or a suggestion. It is useful in the improvement of a web site.

4.3 Database Design

Database is a collection of a large amount data. This system only stores information in text.

The database of this system created as 'PregInf' with using Microsoft SQL Server 7.0. This database contains tables as shown below;

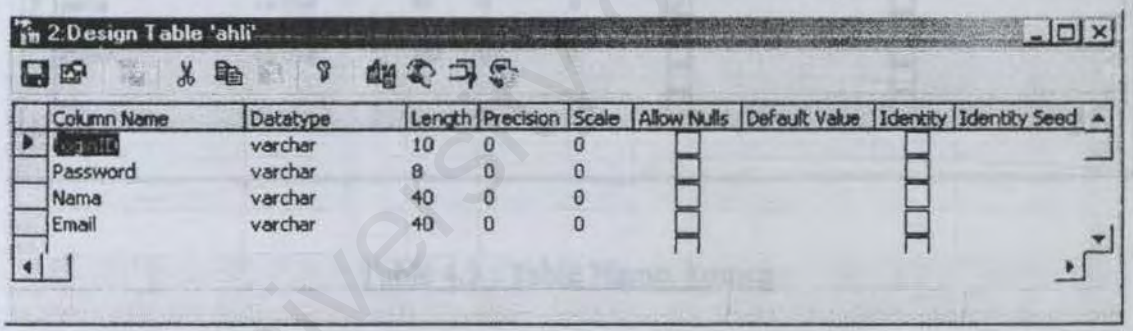
- ahli

- komen
- Soalan

4.3.1 Data Dictionary

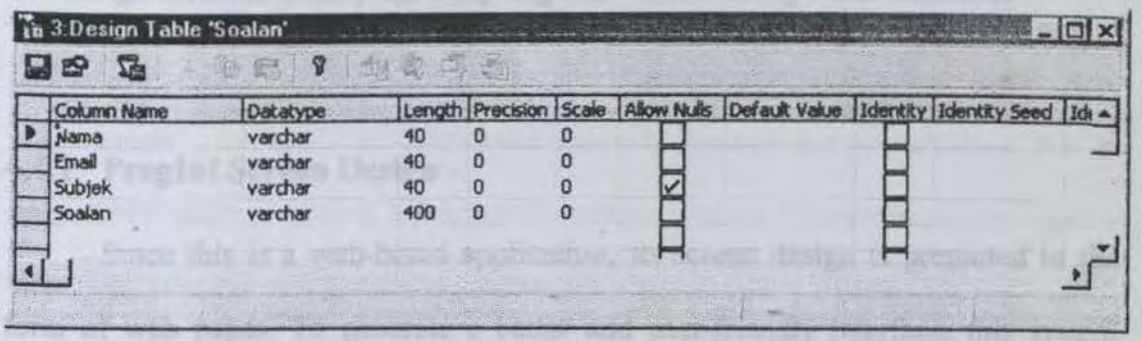
Member table is created as '**ahli**'. The a*hli* table used to store information of the member. '**Soalan**' table is used to store information of the questions sent by user in Expert's Corner. '**komen**' table is used to store comment posted by users in Feedback section.

Tables designed in Microsoft SQL Server 7.0 as the following:



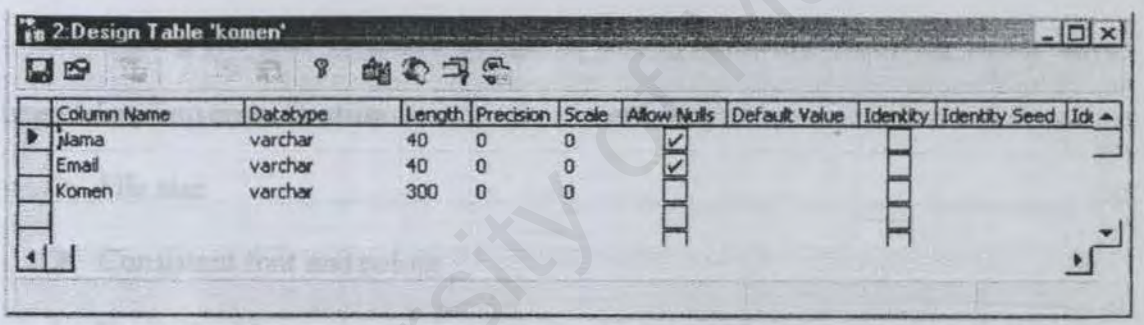
Column Name	Datatype	Length	Precision	Scale	Allow Nulls	Default Value	Identity	Identity Seed
[illegible]	varchar	10	0	0				
Password	varchar	8	0	0				
Nama	varchar	40	0	0				
Email	varchar	40	0	0				

Table 4.1 Table Name: ahli


3: Design Table 'Soalan'

Column Name	Datatype	Length	Precision	Scale	Allow Nulls	Default Value	Identity	Identity Seed	Ide
Nama	varchar	40	0	0					
Email	varchar	40	0	0					
Subjek	varchar	40	0	0	☑				
Soalan	varchar	400	0	0					

Table 4.2 Table Name: Soalan


2: Design Table 'komen'

Column Name	Datatype	Length	Precision	Scale	Allow Nulls	Default Value	Identity	Identity Seed	Ide
Nama	varchar	40	0	0	☑				
Email	varchar	40	0	0	☑				
Komen	varchar	300	0	0					

Table 4.3 : Table Name: komen

4.4 User Interface Design

User interface can be an important factor to determine whether the user navigate the web site would revisit, especially in a web site that mainly provide information to the user. The user interface is the components of the system that

communicates with the users or it serve as the doorway into an interactive system. The design involves specifying, designing and implementing a user interface.

4.4.1 PregInf Screen Design

Since this is a web-based application, its screen design is presented in the form of web pages. To generate a better and user-friendly interface, this system screens design are formatted in a standard layout so that various types of information, instruction and messages always appear in the same general display areas.

During the user interface design of this system, the following issues have been taken into consideration.

- File size
- Consistent font and colour
- Error checking and error message for the invalid input.

In general, PregInf screen design is divided into twp parts, which are navigation bar and working area. Navigation bar is simply an index that guide visitors to find their ways to their interested pages directly, quickly and easily. Whereas, working area is an area that interacts with user's input and a place to display the results and information. The standard layout can teach users how to use the system effectively and let users familiar with the system.

Since this web page is purposed to providing information, thus information provided are categorized. Each page has a specific objective or topic to be presented.

If the amount of information is too large to be grasped by the reader at one glance, it is broken into smaller sections, which are easily understood.

Page layout features are kept strictly consistent to maintain a site wide characteristic look and feel. This consistency is especially important in a WWW-based application as certain links, which contain support information to the topic at hand, may take the user away from the parent site.

Please kindly refer to the user manual for the user interface in this system.

4.5 Data Flow Diagram (DFD)

DFD is a method to illustrate how data flows in a system. DFD describes how data flows from external entities through a set of process or activities in the system. By representing system process with DFD, system could be easily understood by non-technical people.

DFD for this system is shown at the following pages:

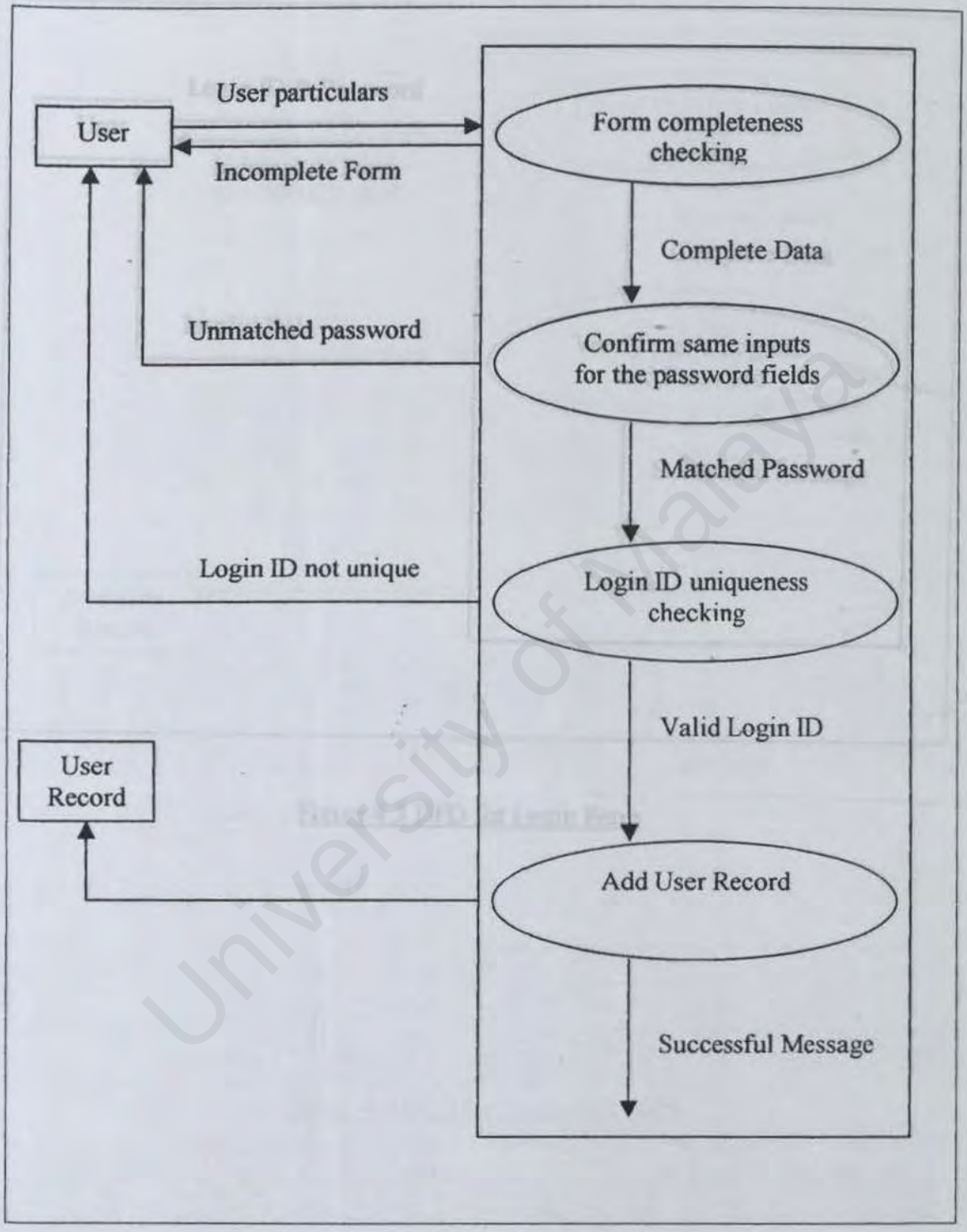


Figure 4.2 DFD for User Registration Form

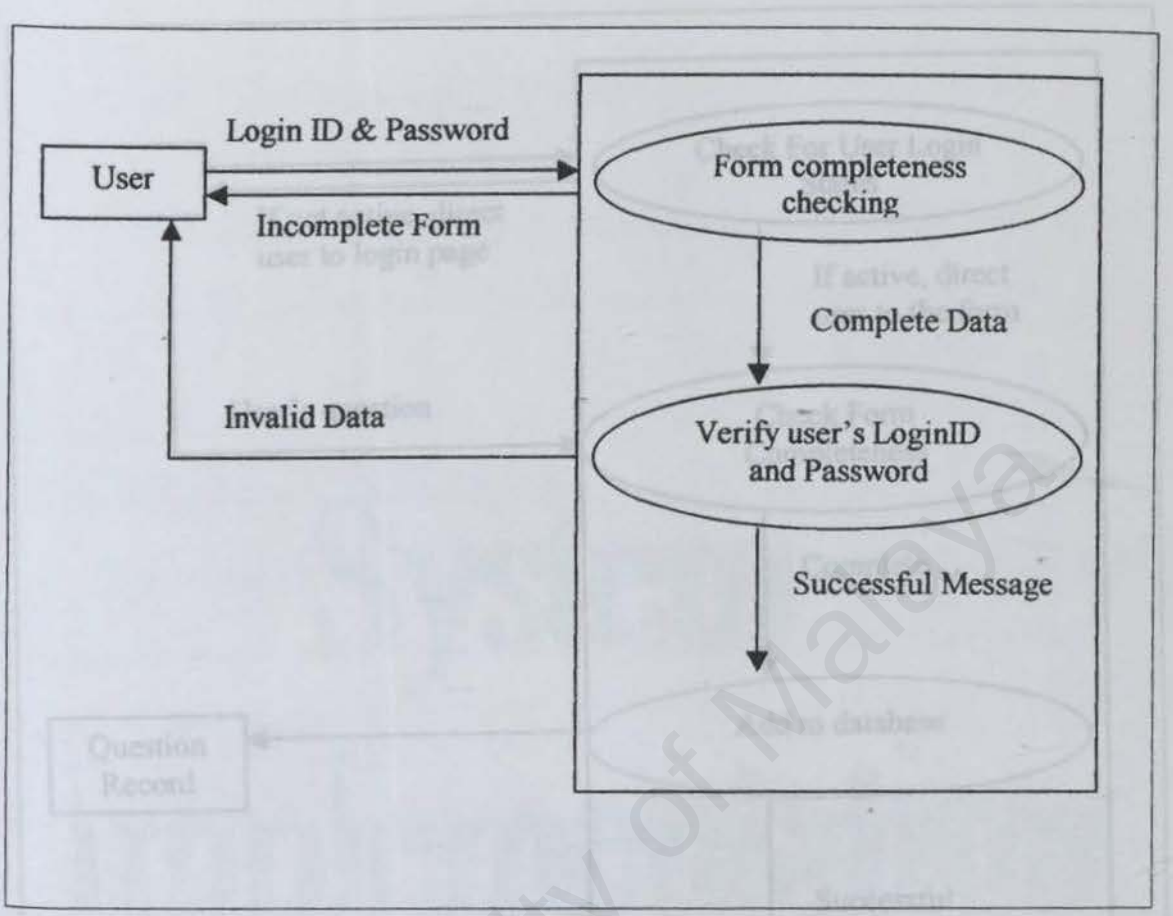


Figure 4.3 DFD for Login Form

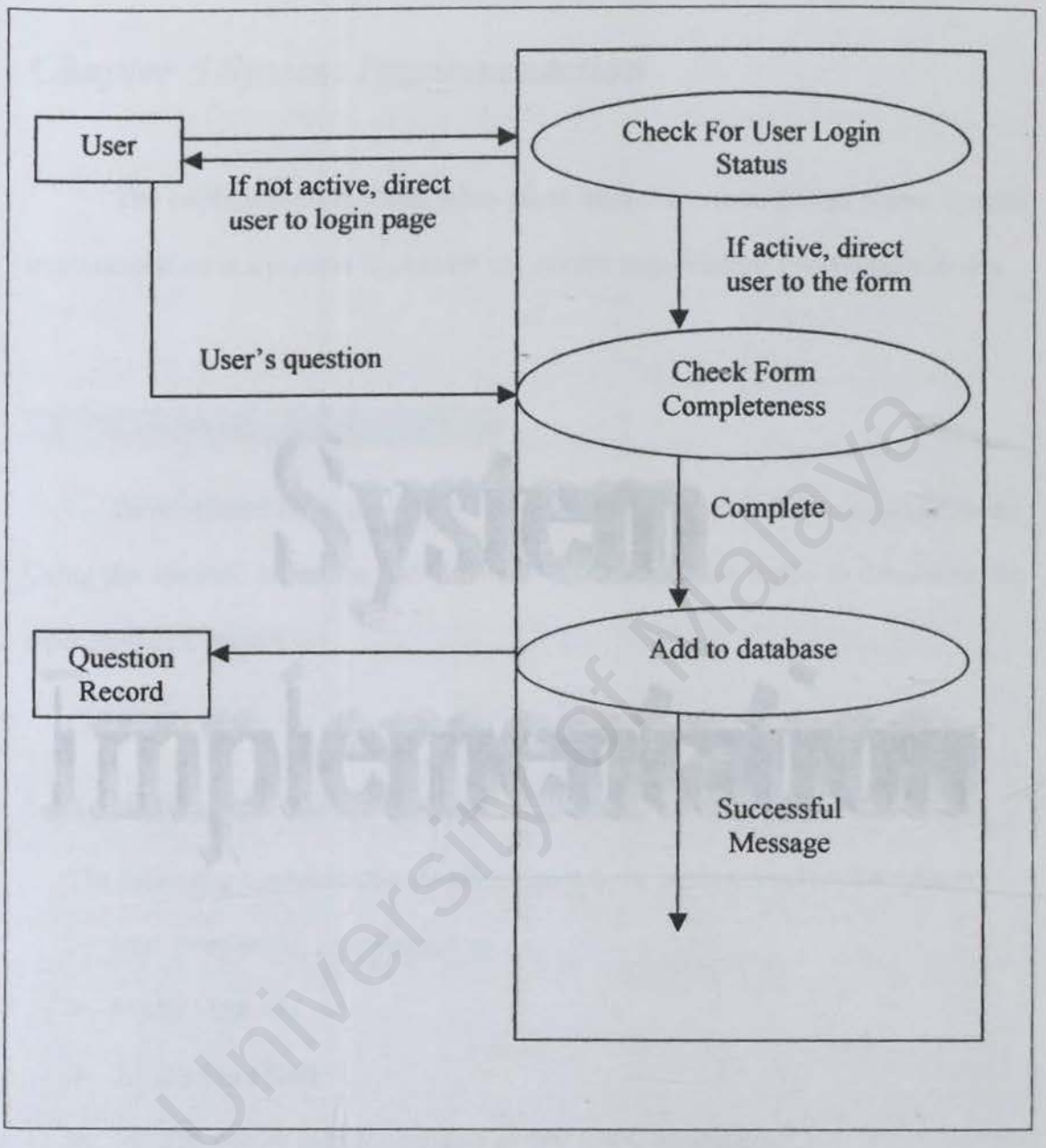


Figure 4.4 DFD for Question's Form

System Implementation

Chapter 5 System Implementation

The implementation phase takes place after the system design phase. System implementation is a process to convert the system requirements into program codes.

5.1 Development Environment

Development environment consists of hardware and software configurations. Using the suitable hardware and software is an important factor to determine the successful of a project.

5.1.1 Hardware Configurations

The following hardware specifications have been used to develop this system:

- Intel Pentium(II) 266Mhz processor
- 64MB SD RAM
- 2.1 GB Hard Disk
- 14" 256-colour monitor capable of 800 x 600 resolution
- 1.44 MB Floppy Drive
- 32X CD-ROM Drive
- Speaker
- Other standard computer peripherals

5.1.2 Software Configurations

The software specifications used in the development of this project are illustrated in Table 5.1.

Software	Usage	Description
Microsoft Windows NT Server 4.0	System Requirements	Operating system
Microsoft Windows 98	System Development	Operating System
Microsoft Internet Information Server 3.0	System Requirements	Web server
Microsoft SQL Server 7.0	System Requirements	Database server
Microsoft Visual Interdev 6.0	System Development	ASP editor
Internet Explorer 4.0 and above	System Requirements	Web browser
Adobe Photoshop 6.0	System Development	Graphics Editor
Macromedia Dreamweaver 3.0	System Development	HTML editing
Macromedia Fireworks 3.0	System Development	Graphics editor
Macromedia Flash 5.0	System Development	Authoring tool
Microsoft Word	System Development	Documentation
Notepad	System Development	HTML, JavaScript, ASP editing
Flash Player	System Requirements	Plug-In for Flash movie

Table 5.1 Software Configurations

5.2 Project Development

The design must be translated into the form that can be understood by the machine. The development of the web-based information system basically including 3 stages, which is data preparation, database connection and Coding for functions.

5.2.1 Data Preparation

Since this system's purpose is mainly providing information to users thus web page design could be an important factor that determines the successful of the project. Data such as text and graphics are prepared parallel with the web page design.

5.2.1.1 Text

The information about pregnancy is taken from books or magazines. These information is typed in document file first using Microsoft Word 2000. Then it is copied and pasted as a text in Dreamweaver to make it a HTML page.

5.2.1.2 Still Images

Still images, mainly scanned photographs, are included in the various pages within the web application, with the primary objective being to provide the user with pictures of the related information mentioned in the text. These still images are obtained from two main sources: through published photographs and from Internet.

Two internet standard inline image file formats are selected as the final output format types: the JPEG (.jpg) formats used primarily for scanned

photographic images, and the GIF89A (.gif) interleaved graphic format for all other still image types.

All of the images are edited using graphics editor such as Adobe Photoshop 6.0 and Macromedia Fireworks 3.0. These images have optimized file size for faster web delivery.

5.2.1.3 Animated Graphics

Animated graphics are used to liven up certain pages, with the specific intention of drawing attention to the items with which they are associated or to make the page more attractive.

Many animated graphics are borrowed from various animated gif repositories on the WWW, but some are created originally.

All of the animated graphics are modified in above-mentioned graphics editor. These images are in GIF file format.

5.2.1.4 Flash Movie

Flash movie in this system are created originally using Macromedia Flash 5.0. Flash is a great authoring tool that can make the web page more attractive and flash movie can be optimized for web delivery (in file format .swf).

Sound is added to the movie to make it more interesting. Action scripts in Flash also used to create the interactive movie for fetus development.

Flash movie used to present since most of the web user already have Flash Player installed. Flash is lauded for being one of the web most accessible plug-ins.

5.2.2 Database Connection

It is an important step to do before the coding of web pages that involve process of data input by user that involve the database. SQL server login have to be added first then ODBC's Data Source (DSN) are set up through Control Panel. To access a DSN for an ASP page, DSN is set up as system DSN.

Below are the example codes in ASP that used to connect to database after setting the ODBC.

```
set strConn = Server.CreateObject ("ADODB.Connection")
        strConn.Open "DSN=PregInf;UID=yen;password=;"
```

Figure 5.1 Example to show Database Connectivity

5.2.3 Coding

Since this is a web-based information system, the scripts are coded using HTML, server side script and client side script that should support and enhance the web application.

5.2.3.1 HTML

HTML is mainly coded with using Macromedia Dreamweaver 3.0, a great HTML editor that provides many functions and user-friendly interface. Data that has prepared such as text, Flash movie and graphics are inserted into the web page easily by using Dreamweaver. Some codes are written using Notepad.

5.2.3.2 ASP (Active Server Pages)

ASP is coded using Microsoft Visual Interdev 6.0, in VB script. ASP is mainly used for server-side scripting. In this project, all the server-side scripting is written for process that involves the database. The server side scripting used is as below:

- Request object
- Response object
- Session object
- ADO Object

5.2.3.3 Java Script

Since client side script is interpreted by user browser and does not sent to web server for processing, the efficiency of this system is improved and enhanced with the using of client side scripting. Client side script helps to reduce the network traffic problems since it reduce user requests that need to be sent to the server and get response from the server. Besides save the server resource, client side script also provides a better and quick response to the user. JavaScript used as a client-side script for form validation.

Java Script also used in creating the games for the system.

5.2.3.4 Coding Principles

Several principles are applied during the development of this system to ensure that the quality and the proper structure in the code generation.

I. Readability

Codes should be easy to read and understandable. It is very important when it comes to the enhancement of the system in the future. In addition, the meaningful variables and labels will provide an effective and way in reading the codes.

II. Maintainability

Codes should be easy to read, corrected and revised. Codes that perform functions for a module should be grouped together. On the other hand, the codes should be tried simplify as possible with doing in separate module. It is called loose coupling.

III. Robustness

Errors handling should be done to increase the robustness of the system. Appropriate errors message should be displayed response to user's input. System failure should be minimized or avoid it to be happened.

```
<%@ Language=VBScript %>

<!-- #include file = "../Adovbs.inc" -->

<%
 Dim strLoginID, strPassword
 strLoginID = Request("LoginID")
 strPassword = Request("Password")

 Dim R

 set strConn = Server.CreateObject ("ADODB.Connection")
```

```
  strConn.Open "DSN=PregInf;UID=yen;password=;"
  set R = Server.CreateObject("ADODB.Recordset")
  strSQL = "SELECT * FROM ahli WHERE LoginID = '" & strLoginID &
"'."
  ;
  R.Open strSQL, strConn

  If R.EOF Then                                    ' User not found
   Session("LoginID") = Request("LoginID")
   If Request("SecondTry") = "True" then                ' User's had two goes
    Response.Redirect "daftar.asp?NotFound=True"          ' - must register
   Else                                  ' Username wrong; password wrong
    Response.Redirect "login.asp?SecondTry=True"       ' - allow another go
   End If
  Else                              'One or more users found - check password
   While Not R.EOF
    If  UCase(R("Password"))  =  UCase(strPassword)  Then    'password
matched
     Dim strName, strValue
     For Each strField in R.Fields
      strName = strField.Name                  ' populate session variables
      strValue = strField.value
      Session(strName) = strValue
     Next
     Session("blnValidUser") = True
     Response.Redirect "success.htm"     ' successful login
    Else
     R.MoveNext
    End If
   Wend
   Session("LoginID") = Request("LoginID")        ' if we get this far then...
                        ' ...password doesn't match any of DB entries

   If Request("SecondTry") = "True" then                ' User's had two goes
    Response.Redirect "daftar.asp"                  ' - must reregister
   Else                                ' Username right; password wrong
    Response.Redirect "login.asp?SecondTry=True&WrongPW=True"
                                        '- allow another go
   End If
  End If
%>
```

Figure 5.2: Simple Example of ASP Coding (CheckLogin.asp)

Chapter 6 System Testing

System testing is a critical phase that ensures the system fulfills user requirements. Therefore, a systematically test procedure is need to make sure the system is tested thoroughly and completely.

First, each program unit or sub-unit is tested at it owns. Such testing is called unit testing. Then, integration testing is conducted to verify that the program units work together. Sub-system testing used to test the sub-system and overall system testing used to test the overall system.

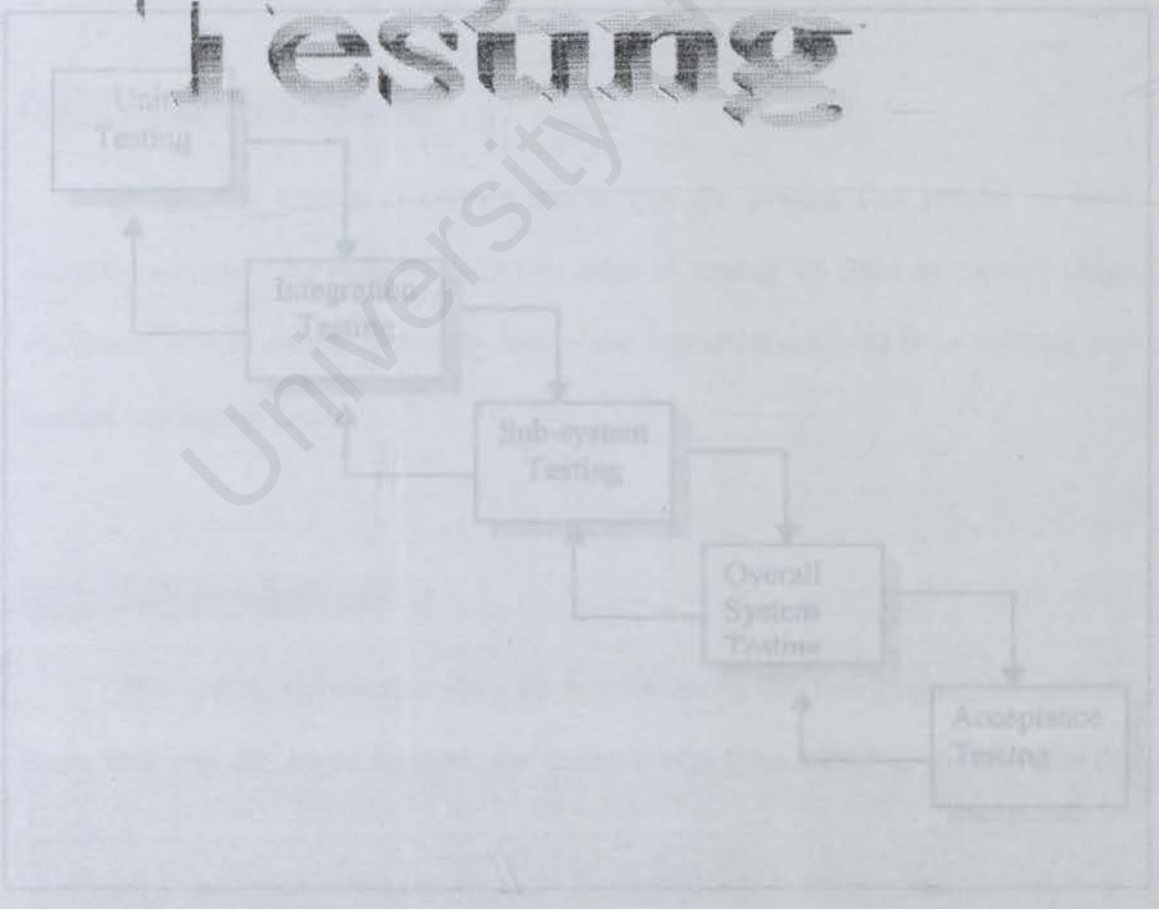


Figure 6.1 The Process of System Testing

Chapter 6 System Testing

6.1 Introduction

System testing is a critical phase that ensures the system fulfills user requirements. Therefore, a systematically test procedure is need to make sure the system is tested thoroughly and completely.

First, each program unit or sub-unit is tested at it owns. Such testing is called unit testing. Then, integration testing is conducted to verify that the program units work together as designed. Finally, sub-system testing used to test the sub-system and overall system testing used to test the overall system.

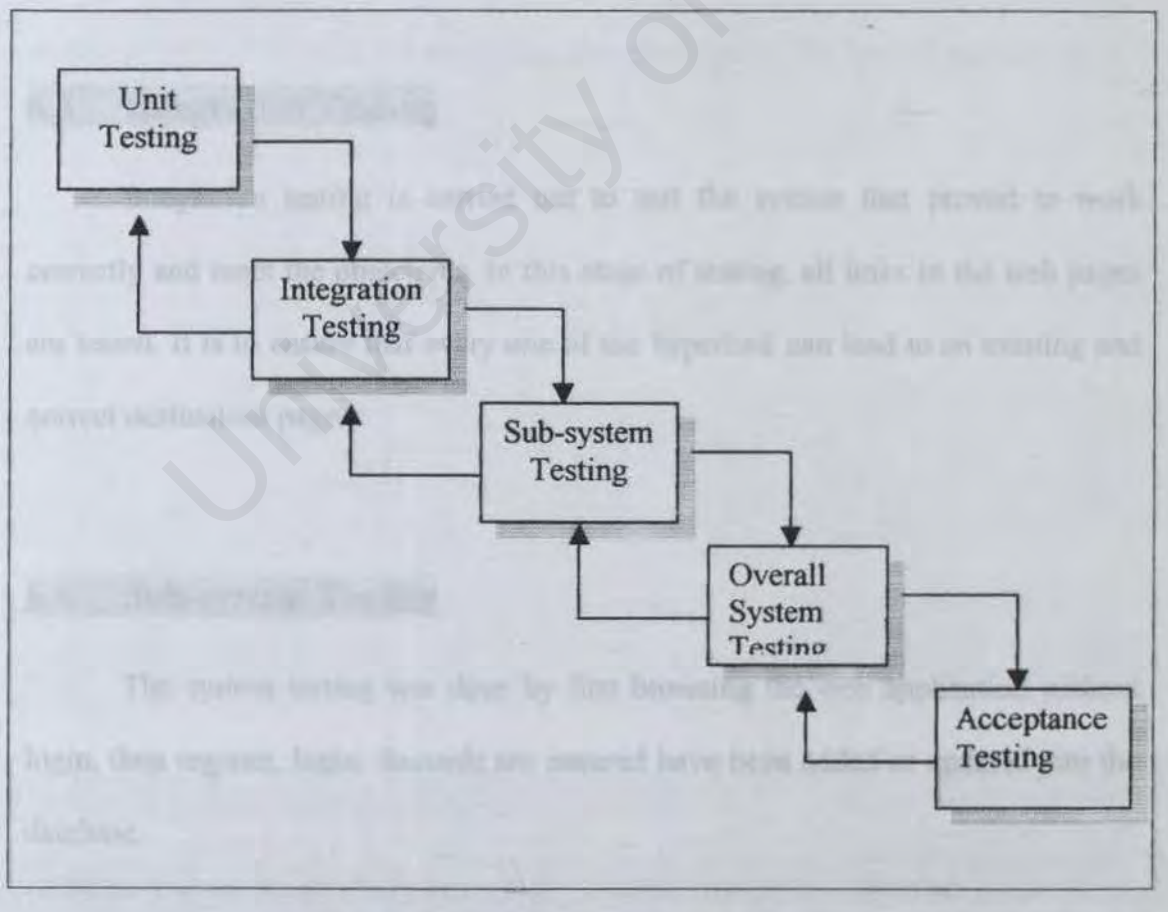


Figure 6.1 The Process of System Testing

6.2 Unit Testing

The unit testing was conducted throughout the implementation once a new unit was successfully built up. Each unit is tested independently to ensure that it operates correctly.

For PregInf, every web page is tested separately. It is to ensure that every link is correctly in the same page. Besides, page-downloading time is also tested to ensure it is optimized for web delivery.

For page that process user's input data, user input validation is tested in this stage to ensure proper entry for very fields in the form.

6.3 Integration Testing

Integration testing is carried out to test the system that proved to work correctly and meet the objectives. In this stage of testing, all links in the web pages are tested. It is to ensure that every one of the hyperlink can lead to an existing and correct destination page.

6.4 Sub-system Testing

The system testing was done by first browsing the web application without login, then register, login. Records are ensured have been added or updated into the database.

6.5 Overall System Testing

System testing is actually a series of being carried out to fully exercise parallel in the system. This testing is used to ensure that all the components or modules of the system are functioning properly.

6.6 Acceptance Testing

The acceptance testing commences when the system is ready to be used. The usability testing is done and performed by the users. Users involved in this stage to make sure the system meets their understanding of the requirements, which may be different from the developer. During the test, besides the functionality of PregInf is demonstrated to the users, the users may also experience with PregInf themselves.

Chapter 7 System Evaluation

In this phase, Preglnf was evaluated to identify its strengths, limitations, and proposals were made for the future enhancements.

7.1 Problems Encountered During Development

A number of problems were encountered throughout the development of Preglnf.

7.1.1 Difficulties In Determining The Scope Of The System

[illegible] frame. Not all the information about pregnancy is put into the web page. Advices and opinions were given by project supervisor to outline the scope of the project to build during the initial stages. On the other hand, the results of survey and interview have given an outlook of the system scope.

7.1.2 Problems In Choosing Tools And Language

There is many tools and language choice in the market. Every tools and language have its own advantages. Thus, it is difficult to determine the most appropriate language and tools for the development of Preglnf.

Chapter 7 System Evaluation

In this phase, PregInf was evaluated to identify its strengths, limitations, and proposals were made for the future enhancements.

7.1 Problems Encountered and Solutions

A number of problems were encountered throughout the development of PregInf.

7.1.1 Difficulties In Determining The Scope Of The System

It is impossible to build a full-scale complete system within the short time frame. Not all the information about pregnancy is put into the web page. Advices and opinions were given by project supervisor to outline the scope of the project to build during the initial stages. On the other hand, the results of survey and interview have given an outlook of the system scope.

7.1.2 Problems In Choosing Tools And Language

There is many tools and language choice in the market. Every tools and language have its own advantages. Thus, it is difficult to determine the most appropriate language and tools for the development of PregInf.

To gain more information of web-based and identifies the most appropriate approach to develop PregInf, in depth studies and research on the web based programming language was carried out in the earlier stage of the development.

These activities include Internet surfing, reading topic related magazine and reference books. Besides, discussions with coursemates were conducted to collect their opinions and ideas.

7.1.3 Lack Of Knowledge In The Languages And Tools

Due to the time constraint, learning and developing process was done in parallel. Without a strong base of the ASP language, a lot of time spent in looking for solutions to solve the problems that were occurred during the development of PregInf.

Without experience with using Dreamweaver and especially Flash, an authoring software that has much different with the software ever used, a lot of time has been taken to learn it from scratch while creating a new Flash movie.

These problems were tried to be solved through the Internet surfing by downloading tutorial notes and finding solution in forums such as newsgroup.

7.1.4 Difficulty In Designing User Interface

Without experience in such development, developing a suitable, standard and user-friendly user interface became a difficult task. The management of the controls and graphics on the web pages eaten up a lot of times to meet the final standard, systematic and user-friendly interfaces.

To gain more information on the layout of GUI (Graphic User Interface), pregnancy related and other interesting web sites were taken as reference for developing a proper and standard interface. Adobe Photoshop, Macromedia Dreamweaver and Flash were used to generate attractive images.

7.2 System Strengths

There are several advantages of this system as listed below:

7.2.1 User Friendliness

The interface of the system is user friendly and consistent where a standard and systematic web page design is given. Besides, the web pages are designed using frames to prevent the user (either a frequent Internet surfer or not) from losing themselves in huge information sea when visiting this web page.

7.2.2 Ease To Use

This system is very easy to use. The commands and the layouts are simple and well organized. Therefore, it is easy to learn up, use and understandable.

7.2.3 Easy Accessible

This system is a web-based application and can be accessed easily using the web browser such as Microsoft Internet Explorer 5.0, which is the domain web browser in the market at the moment.

7.2.4 System Transparency

System transparency refers to the condition where the users do not need to know where the database resides, how is the system structure, its database management system and anything related to the system built. Users are just required to know how to communicate with the user interface.

7.2.5 Reliable System with Effective Errors Handling

Data input of user is validated and verified to prevent errors caused by the invalid input. If there is an input failure, an error message is prompted to inform the user about the error. For example, there is an error message prompted for retry login when user input the invalid login ID or password.

7.2.6 Optimized File Size

All of the pictures or graphics are optimized using the graphics editor. Flash movie also created by considering the file size. In average, the downloading time for each page (except the page that contain flash movie for fetus development) is not more than 10 seconds by using 28.8 kbps modem. This can reduce the time for user

to wait in front of the computer for a web page to be downloaded. This helps them to use the resources efficiently.

7.3 System Limitations

However, there are limitations in this system that are not resolved yet.

7.3.1 No search engine

This system does not provide online search engine. If the information in web page becomes plenty, user may need to getting information faster, directly and efficiently. Thus, user may not satisfy with this system.

7.3.2 Limited Functionality

This system provides only a few functions to user. Online chat room, shopping for buying pregnancy-related product such as baby's clothes, pregnancy women's clothed and others do not exist in this system. Even though above-mentioned functionality is out of the scope of this system, it is an advantage to enhance the system.

7.3.3 Limited Information

This system only provide limited information on pregnancy, giving-birth and after giving-birth. The information mostly is very brief. A pregnancy women may not be satisfied with the information provided.

7.3.4 Web Browser Limitations

These web pages are developed by using Microsoft Internet Explorer 5.0. It is not fully tested in all web browser such as Netscape Navigator or earlier version of Internet Explorer. Thus, it may not display correctly by using other web browser except Microsoft Internet Explorer 5.0.

7.4 Future Enhancement

The system should be maintained throughout the lifetime of the system because the user requirements might vary from times to times. Enhancement in the future will extend the usability of this system. Moreover, the system limitations should be improved to enhance functionality.

Here are some suggestions and possible future enhancements:

7.4.1 Provide Search Engine

A dynamic search engine should be provided for user. This is to prevent time consumed in searching information in huge information sea. A requirement for the

Internet users nowadays and in the future is efficiency. Thus, providing powerful search engine in a web site is very important.

7.4.2 Provide More Information

Since the information provided in this system is limited, it is recommended that more information of the three categories (pregnancy, giving-birth and after giving-birth) to be added. The educational backgrounds of women are higher compared to the previous days. They have more demand on rich and detailed information.

7.4.3 Enhance User Interface

User interface should enhanced from time to time. Multimedia elements such as streaming video, more graphics especially animated graphics and Flash movies should be added to increase its attractiveness, impressive and interactive and to make the web page a truly multimedia program.

7.4.4 More Functionality Added

Online chat room, online shopping for pregnancy-related product should be added to provide more interactivity. A web site that has more functionality provides more flexibility and interactivity to users.

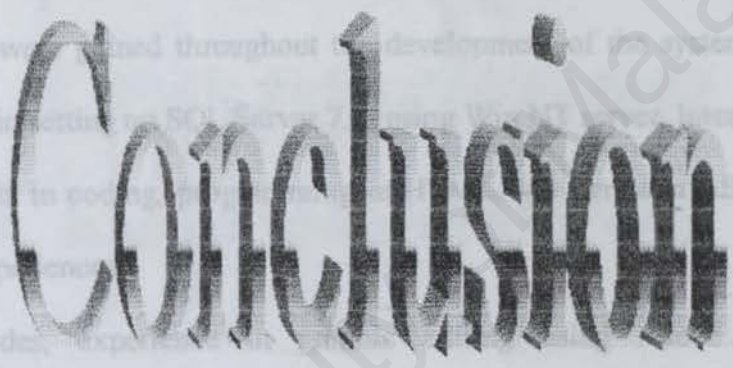
7.4.5 Provide Information In Other Languages

Since this web page is designed especially for women in Malaysia. Thus, English and Chinese Language should be added so that users can browse the information using their preferred language.

7.4.6 Develop For Other Platform

The web page should be designed to enable it to be viewed properly in other browser such as Netscape Navigator. It is because not every Internet User using Microsoft Internet Explorer 5. or higher.

Conclusion



Conclusion

In conclusion, this system has fulfilled its objectives and requirements. The aim of this project is to develop information system for providing information on pregnancy, giving-birth and after giving-birth. Some multimedia elements added to the page to make the information not bored users and make them leave the site.

This project is very important and beneficial. A lot of knowledge, skills and experience were gained throughout the development of the system. These include knowledge in setting up SQL Server 7.0, using Win NT server, Internet technologies, and concepts in coding, programming in HTML, VB Script in ASP and others are valuable experiences.

Besides, experience in graphic editing using Adobe Photoshop and Macromedia Fireworks also provide me a great chance to learn these tools. The authoring software, Macromedia Flash also give me a great experience of how the multimedia elements can be design easily and give dazzling effects to users.

The most important is, I have learned a lot of how to find out the solution whenever I encountered problems about developing an application.

Finally, this project has given me a profound impact in management and communication skills. All the problems faced and experience gained during the system development would be useful in my future career since era is now moving towards Internet technology that requires decent technical and practical knowledge in development of web application.

Appendices

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Glossary

ASP (Active Server Page) : a HTML page that includes one or more scripts that are processed on a Microsoft Web server before the page is sent to the user.

Authorware : It is a visual rich-media authoring solution for creating Web and online learning applications.

Bandwidth : maximum information-carrying capacity of the line or network.

Broadband : refers to telecommunication that provides multiple channels of data over a single communications medium, typically using some form of frequency or wave division multiplexing.

Caesarian : delivery of a child by cutting the walls of the abdomen and uterus.

CGI (Common Gateway Interface) : a standard way for a Web server to pass on a Web user's request to an application program and to receive data back to forward to the user.

Database : a collection of related data that can serve multiple purpose, support multiple users and designed to meet the information needs of an organization.

Director : Director is a frame-based authoring tool that uses a stage metaphor to help the user author an application. Interactivity can be added into Director applications by using an internal language called Lingo.

Dreamweaver : this authoring tool able to incorporate interactivity and simple animation through the use of behaviors.

Fetus : fully developed embryo in the womb or in a egg. It is in the development stage before birth.

Fireworks : this is an authoring software that brings efficiency to Web graphics production. Buttons, animations, and page comps can be quickly created.

Flash : a popular authoring software developed by Macromedia. First introduced in 1996, Flash has become the standard for creating high-impact vector based Web sites that deliver sound, interactivity, graphics and animations and perform flawlessly across multiple browsers and platforms.

Freehand : this is an Macromedia product that enable developer to create eye-catching illustrations, logos, graphics for Macromedia Flash, site storyboards, and design-intensive documents.

FTP (File Transfer Protocol) : this is a standard Internet protocol which is the simplest way to exchange files between computers on the Internet. FTP is commonly used download programs and other files from other servers.

HTTP (Hypertext Transfer Protocol) : The behind-the-scenes Internet protocol that delivers information by way of the World Wide Web. The protocol makes it possible for a user to use a client program to enter a URL (or click a hyperlink) and retrieve text, graphics, sound, and other digital information from a Web server.

IIS (Microsoft Internet Information Server) : this is a Web server that used to handling ASP.

Internet : a loose association of thousands of networks and millions of computers across the world that all work together to share information. It was created in 1969.

JavaScript : a scripting language that is a special kind of programming language used to tie other components together or to accept user input.

MPEG (Moving Picture Experts Group) : MPEG develops standard for digital video and digital audio compression.

Newsgroup : it is a discussion about a particular subject consisting of notes written to a central Internet sites and redistributed through Usenet, a worldwide network of news discussion groups.

ODBC (Open Database Connectivity) : A standard protocol for accessing information in SQL database servers, such as Microsoft SQL Server. ODBC drivers enable Microsoft Access to connect to these SQL database servers and access the data in the SQL databases.

Shockwave : a technology developed by Macromedia, Inc. that enables Web pages to include multimedia objects. Shockwave supports audio, animation, video and even processes user actions such as mouse clicks.

URL (Uniform Resource Locator) : a compact representation of the location and access method for a resource available via the Internet. It used to specify Web locations by providing an abstract identification of the resource location.
URLs of files on Web servers begin with http://

VB (Visual Basic) : a high-level programming language from Microsoft that is graphically oriented and relatively easy to learn, VB can be used to create everything to simple database applications to commercial software packages.

W3C (The World Wide Web Consortium) : W3C sets the standard for HTML and other specifics of the Web.

Web browser : it is able to read the HTML language on a page and translate it to a displayable image. Microsoft Internet Explorer and Netscape Navigator are popular Web browser.

Web server : a program that using the client/ server model and the WWW's HTTP, serves the files that form Web pages to Web users.

WWW (World Wide Web) : WWW is a subset of the Net. It is a collection of interlinked documents that work together using a specific Internet protocol called HTTP. The Web began in 1989.

Kertas Soal Selidik

Arahan : *Untuk setiap soalan, sila tandakan (√) pada ruangan yang sesuai. Sesetengah soalan boleh mempunyai lebih daripada satu jawapan. Tiada jawapan yang salah atau betul. Sila tuliskan pendapat anda dalam ruangan yang sedia ada.*

1. Adakah anda sedang hamil?
   ( ) pernah hamil ( ) sedang hamil

2. Berapakah umur anda?
   ( ) 20-30 tahun ( ) 30-40 tahun ( ) 40-50 tahun

3. Sila nyatakan tahap pendidikan anda.
   ( ) sekolah rendah
   ( ) sekolah menengah
   ( ) kolej/institusi
   ( ) universiti
   ( ) bukan seperti di atas

4. Apakah pekerjaan anda?
   ( ) suri rumahtangga
   ( ) pekerja dalam bidang penswastaan
   ( ) kakitangan kerajaan
   ( ) lain-lain. Sila nyatakan _____

5. Sepanjang kehamilan, dari manakah anda biasanya mendapat maklumat mengenai kehamilan selain daripada doktor dan jururawat?
   Sila berikan penilaian mengikut panduan di bawah

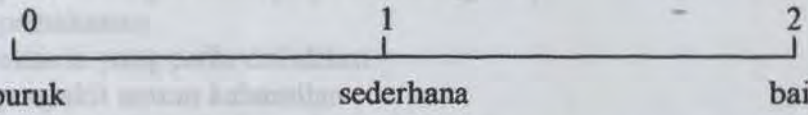
   0 1 2 3
   tidak pernah jarang sederhana sering

   ( ) majalah/ buku/ risalah/ suratkabar
   ( ) televisyen
   ( ) video/ VCD
   ( ) internet
   ( ) saudara mara/ rakan/ orang tua
   ( ) lain-lain. Sila nyatakan _____

6. Adakah anda tahu menggunakan internet?
   ( ) Ya.
   ( ) Tidak. Sila pergi ke Soalan 10

7. Adakah anda pernah mendapat maklumat mengenai kehamilan dalam internet?
   ( ) Ya.
   ( ) Tidak pernah. Sila pergi ke soalan 9

8. Apakah pendapat anda tentang maklumat yang dipaparkan dalam *web page* tersebut?
   Sila berikan penilaian anda mengikut panduan di bawah.



   ( ) pemahaman tentang maklumat(adakah ia mudah difahami?)
   ( ) kualiti maklumat seperti ketepatan, kebolehpercayaan.
   ( ) kecukupan maklumat (adakah ia cukup untuk membantu anda?)
   ( ) cara memaparkan maklumat(adakah ia menarik atau maklumat tidak tersusun rapi?)
   lain-lain. Sila nyatakan _____

   _____

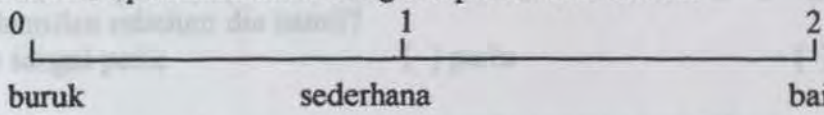
   Sila pergi ke soalan 11.

9. Mengapakah anda tidak pernah mendapat maklumat mengenai kehamilan dalam internet?
   ( ) tidak tahu wujudnya maklumat jenis ini dalam internet.
   ( ) tidak ada minat
   ( ) tidak ada keperluan untuk melamani *web site* jenis ini
   ( ) lain-lain. Sila nyatakan _____

   Sila pergi ke Soalan 11

10. Adakah anda ingin belajar penggunaan internet?
    ( ) Ya
    ( ) Tidak

11. Apakah pengetahuan anda tentang kehamilan ?
Sila berikan penilaian anda mengikut panduan di bawah.



semasa kehamilan:
( ) tanda-tanda kehamilan
( ) ujian kehamilan
( ) perkembangan fetus (bayi di dalam perut)
( ) pemakanan
( ) aktiviti yang perlu dielakkan
( ) penyakit umum kehamilan
( ) tanda-tanda berbahaya dalam kehamilan
( ) latihan jasmani sebelum bersalin

kelahiran anak:
( ) persediaan menyambut kelahiran anak
( ) tanda-tanda bersalin
( ) peringkat-peringkat bersalin
( ) cara bersalin
( ) latihan jasmani selepas bersalin
( ) cara menjaga bayi seperti penyusuan ibu dan botol, menidurkan bayi
( ) pertumbuhan bayi
( ) imunisasi bayi

12. Apakah ciri-ciri yang anda harap dalam *webpage* yang membekalkan maklumat mengenai kehamilan?
( ) maklumat ringkas dan padat
( ) kaya dengan maklumat
( ) banyak gambarajah yang menarik
( ) video dan audio
( ) artikel-artikel tentang kehamilan
( ) ruang pertanyaan kepada pakar
lain-lain. Sila nyatakan _____

_____

13. Pada pendapat anda, adakah seseorang itu perlu mempunyai pengetahuan tentang kehamilan sebelum dia hamil?
    ( ) sangat perlu ( ) perlu ( ) tidak perlu

14. Adakah suami anda mempunyai pengetahuan yang mencukupi tentang kehamilan anda?
    ( ) Ya
    ( ) Tidak

~Terima kasih atas kerjasama anda~

User Manual

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Chapter 1 Introduction

Web-based information system on pregnancy-giving birth (PregInf) is mainly consists of informative pages. This system includes two main sections that is the information section and functionality section.

PregInf allows the general users to browse info on the web page whereas it provides functionality to users too.

PregInf is very easy to learn and use. All the functions in the system can e easily executed by a simple click on the link or button.

This user manual provides the instruction on how to use this system.

1.1 Hardware Requirement

Personal computer with

- At least 32 MB of RAM
- At least 100MB of free space in Hard disk.
- Network connection through existing network configurations or modem (recommended at least 28.8 kbps)
- Speaker
- 256-color monitor capable of resolution 800 X 600 pixels

1.2 Software Requirements

- Windows 95/98/ME or Win NT/2000
- Microsoft Internet Explorer 5.0
- Flash Player 5.0

Chapter 2 Getting Started

PregInf is a web application that provides info to users without requires any installation of files, as long as t user can access the Internet and browse it with the web browser.

Figure 2.1 illustrates the main page of PregInf that created under an organization name, PregInf.Org.

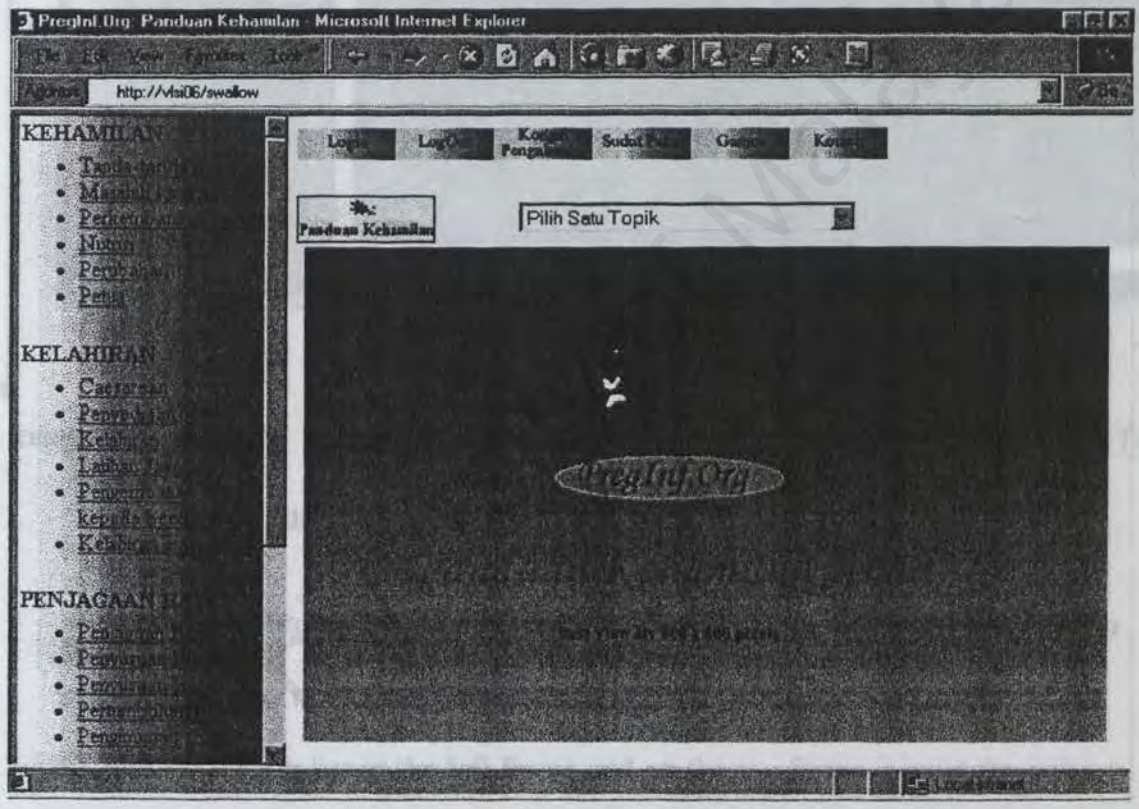

Figure 2.1(a) Homepage of PregInf (Page Up)

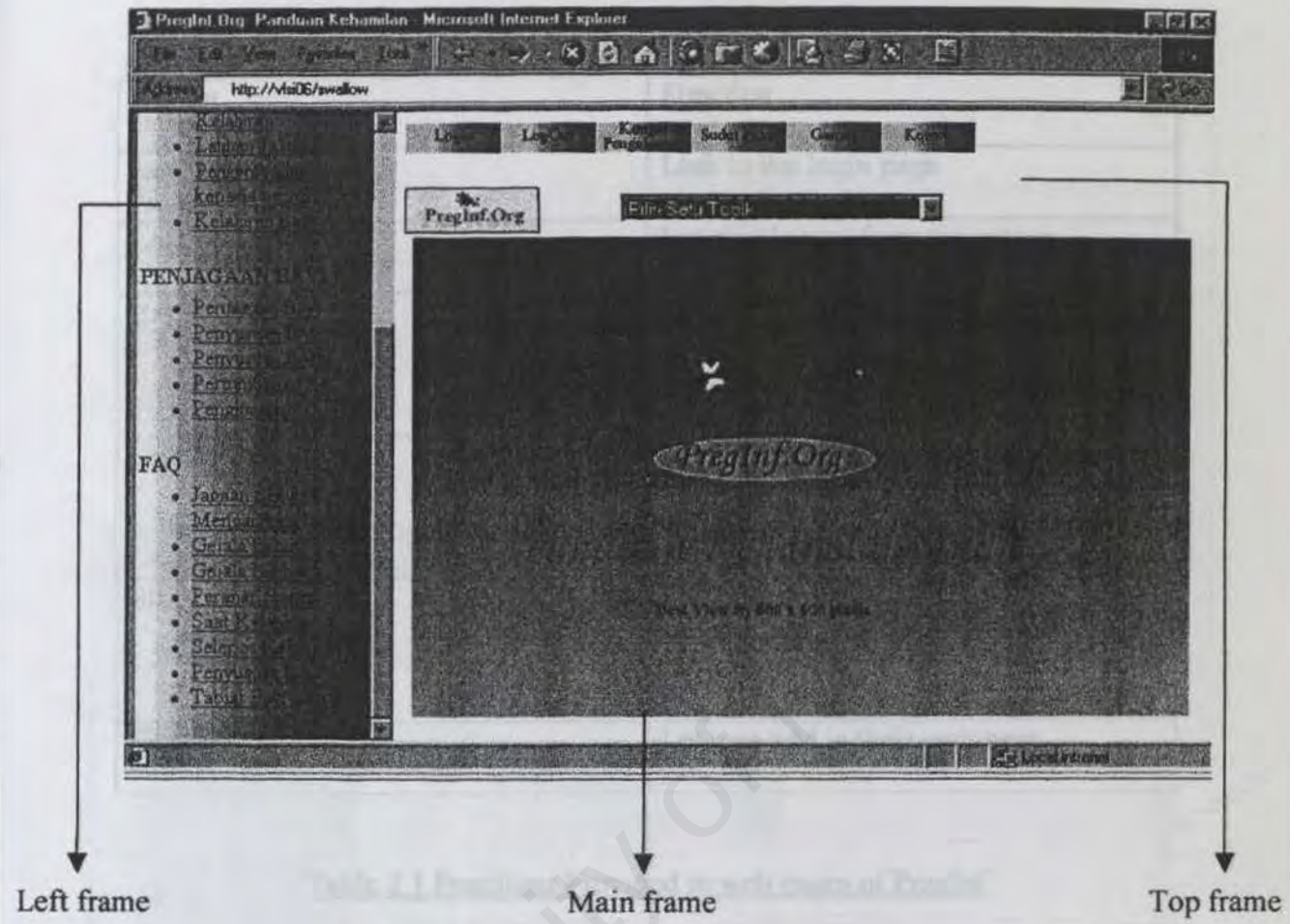

Figure 2.1(b) Homepage of PregInf (Page Down)

When user enter into this site, a flash movie would be played automatically to welcome the user to the site, provided user's PC has Flash player Plug-in.

The navigation bar at the left frame and on the top frame is exist throughout the time user browsing the information or uses a function. It is easy to use by just a mouse click on the text with link on the left frame, or chooses a topic from the jump menu in the top frame. The related links would appear in mainframe, users could view the information in the main frame.

Text with the hyperlink in the left frame lead user to visit the web page according the name of hyperlink.

Table 2.1 illustrated the function available in the top frame:

Button	Function
Login	Link to the login page
Logout	Let user logout from the system
Expert's corner	Let user that has logged in to ask questions
Games	Let user play word-guessing games on the net.
Story sharing section	Let user deliver their story to the web master
Comment	Let user add in their comment

Table 2.1 Functions Provided in web pages of PregInf

Chapter 3 Browse The Information

PregInf enables the user to browse all over around from main homepage and other page. As mentioned in Chapter 2, there is many hyperlinks to link to the related information. The following figures show the result when user clicked on hyperlink of *Penjagaan Bayi.*

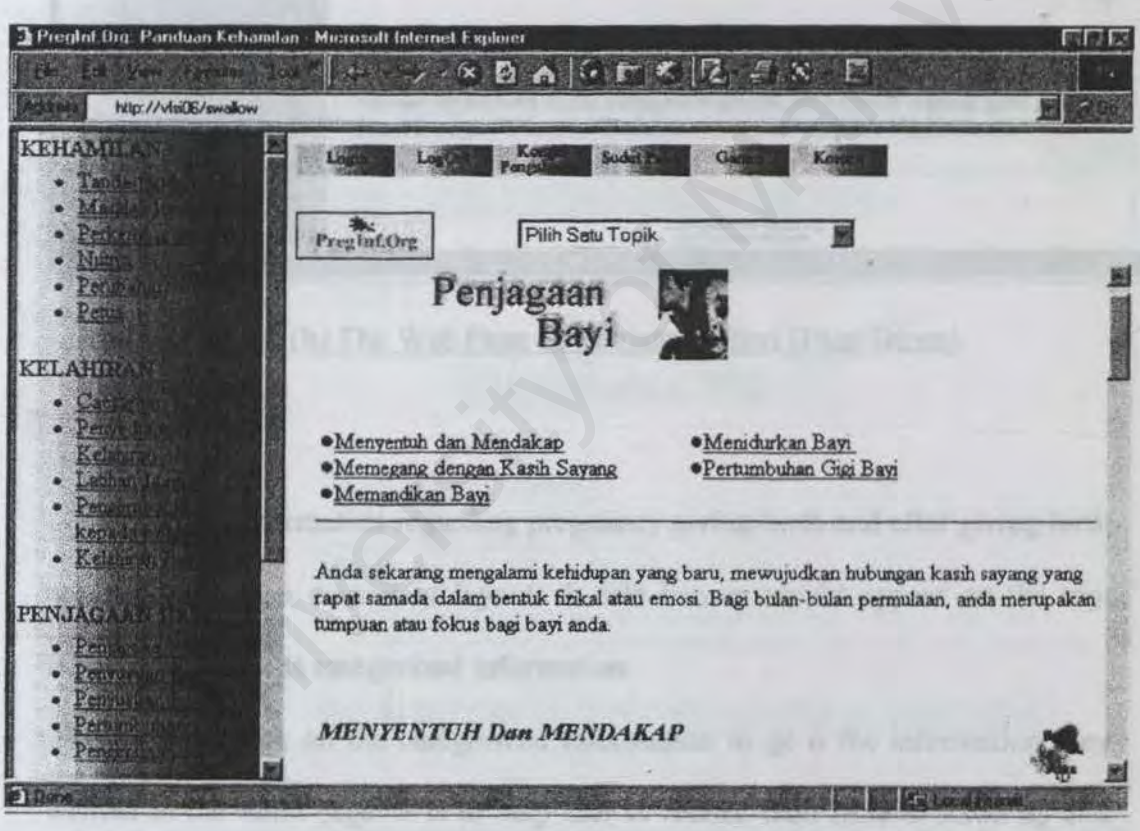

Figure 3.1(a) The Web Page Of Penjagaan Bayi (Page Up)

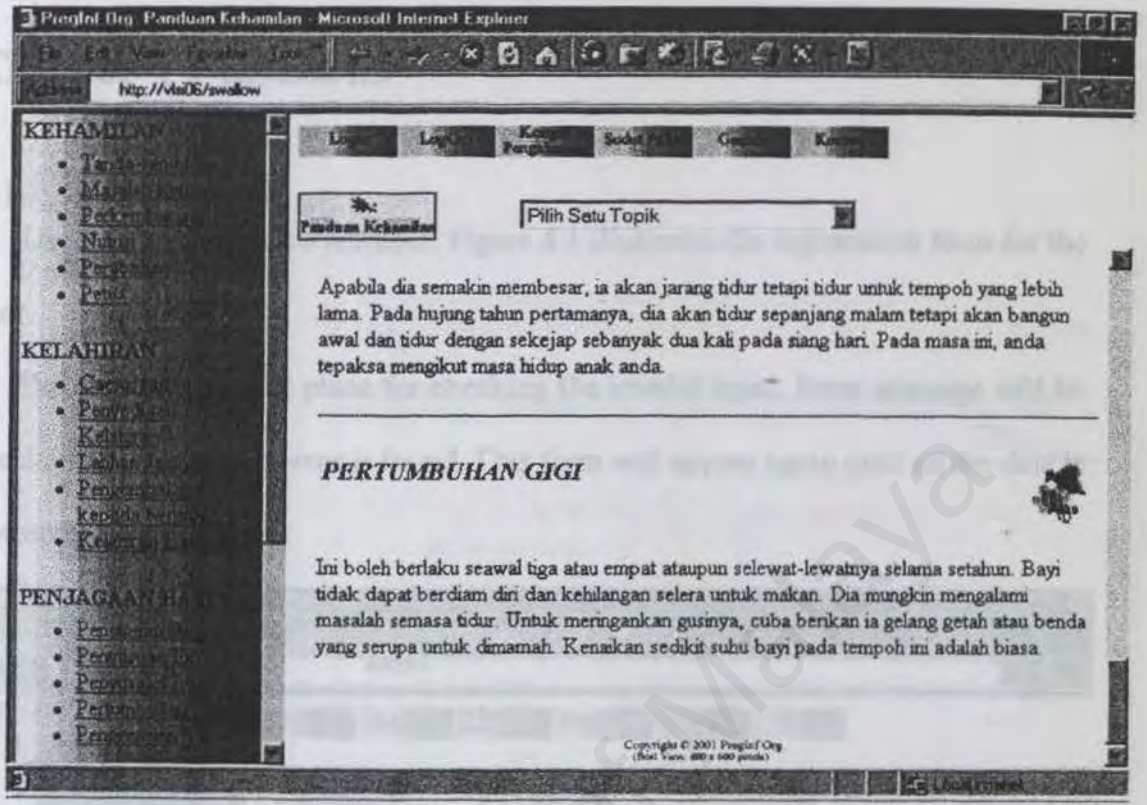

Figure 3.1 (b) The Web Page Of Penjagaan Bayi (Page Down)

All of the information regarding pregnancy giving-birth and after giving-birth are displayed in a consistent layout. A title banner would appear on the top. Below the banner is categorized information.

User can click on the categorized information to go o the information they wanted in the same page. It is to help user to reduce their time to scroll up and down while searching for their information.

Every section in the page also provides an image to link to the top of the page. The purpose of all these is to let users go to their wanted information by only mouse-click, but not scrolling up down.

Chapter 4 Functions

4.1 Registration

Users can register as a member. Figure 4.1 illustrates the registration form for the user.

Errors handling take place for checking the invalid input. Error message will be displayed in case of an error is found. This form will appear again until all the data is correctly fill in.

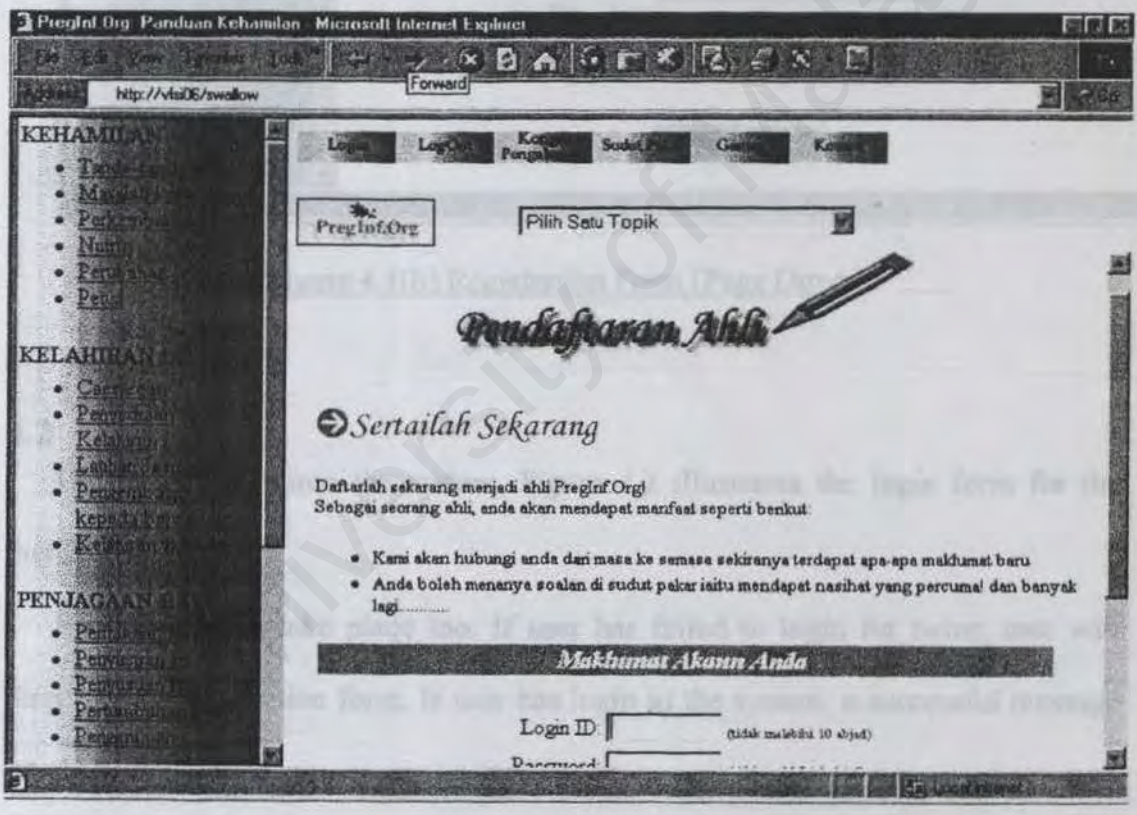

Figure 4.1(a) Registration Form (Page Up)

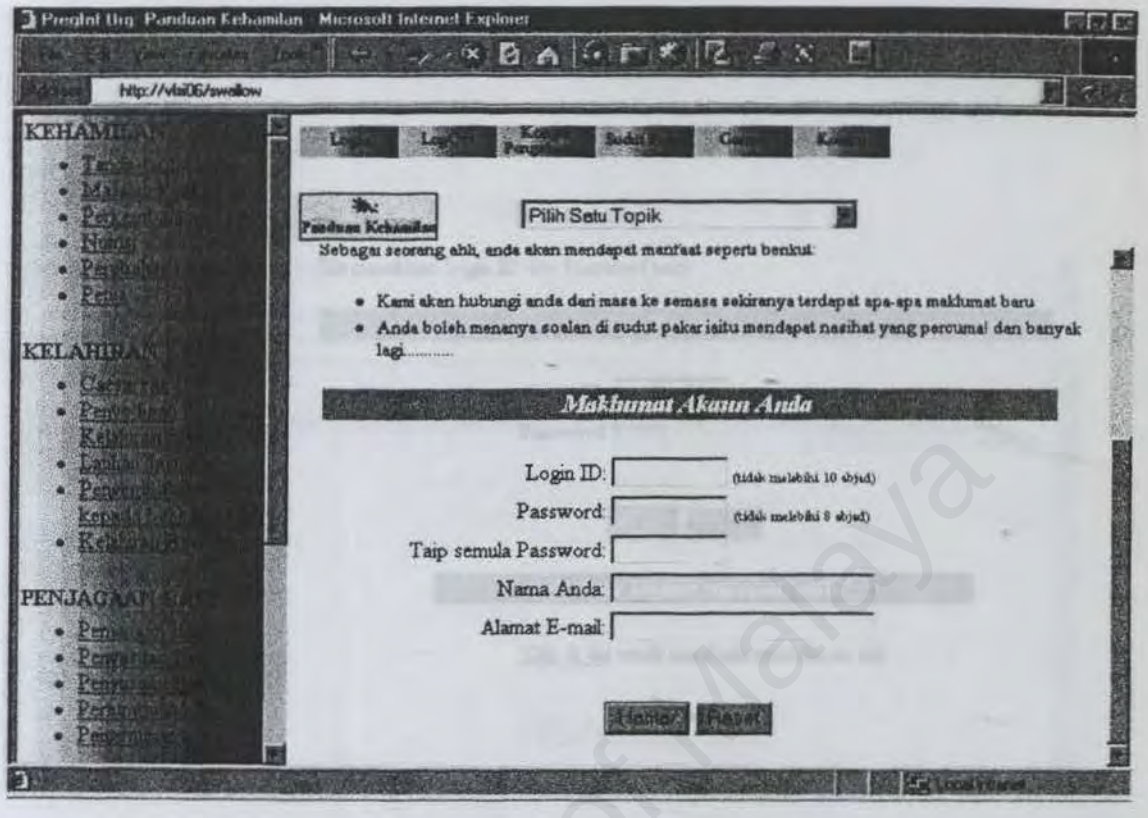

Figure 4.1(b) Registration Form (Page Down)

4.2 Login

Users can login into the system. Figure 4.2 illustrates the login form for the member.

Errors handling take place too. If user has failed to login for twice, user will direct to the registration form. If user has login to the system, a successful message would be displayed.

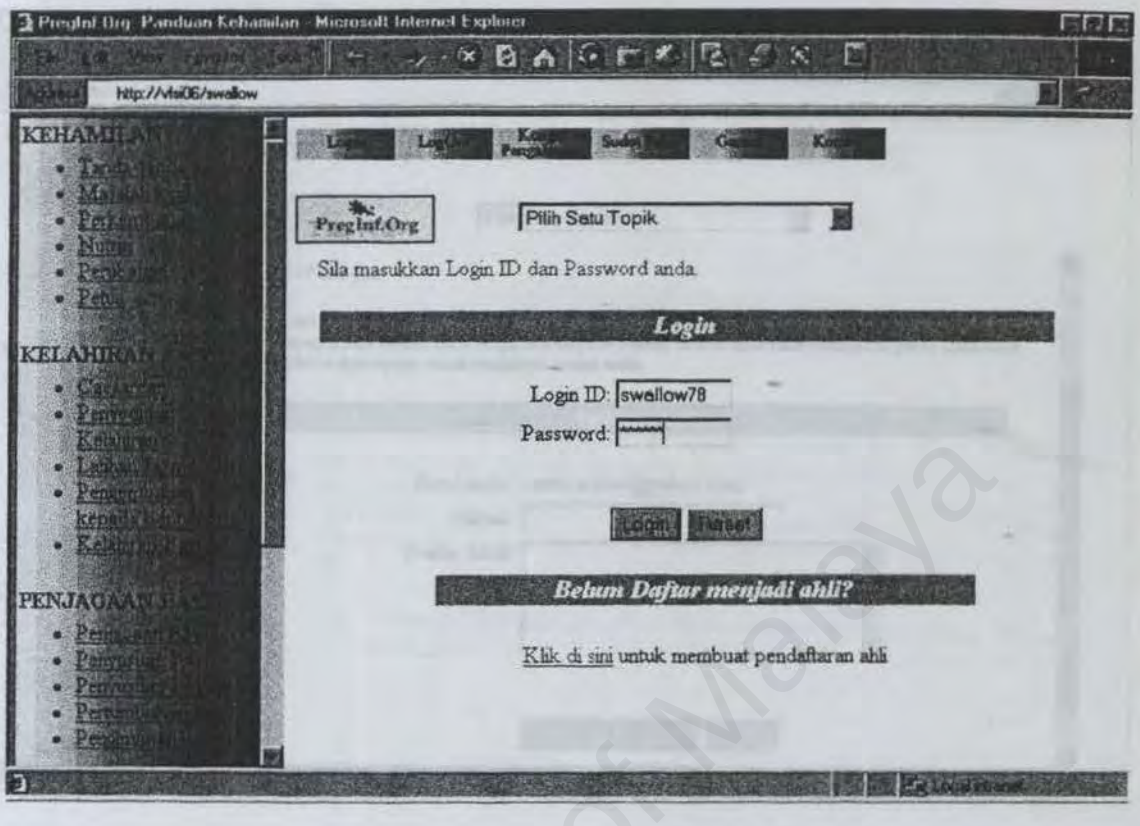

Figure 4.2 Login Form

4.3 Expert's Corner

User can ask questions by filling up the form. User needs to login first before they can use this service.

If user click on the button (Sudut Pakar) and they have found login status is not active, the user would be directed to login page.

Errors handling ensure the related fields in the forms have been filled-up completely.

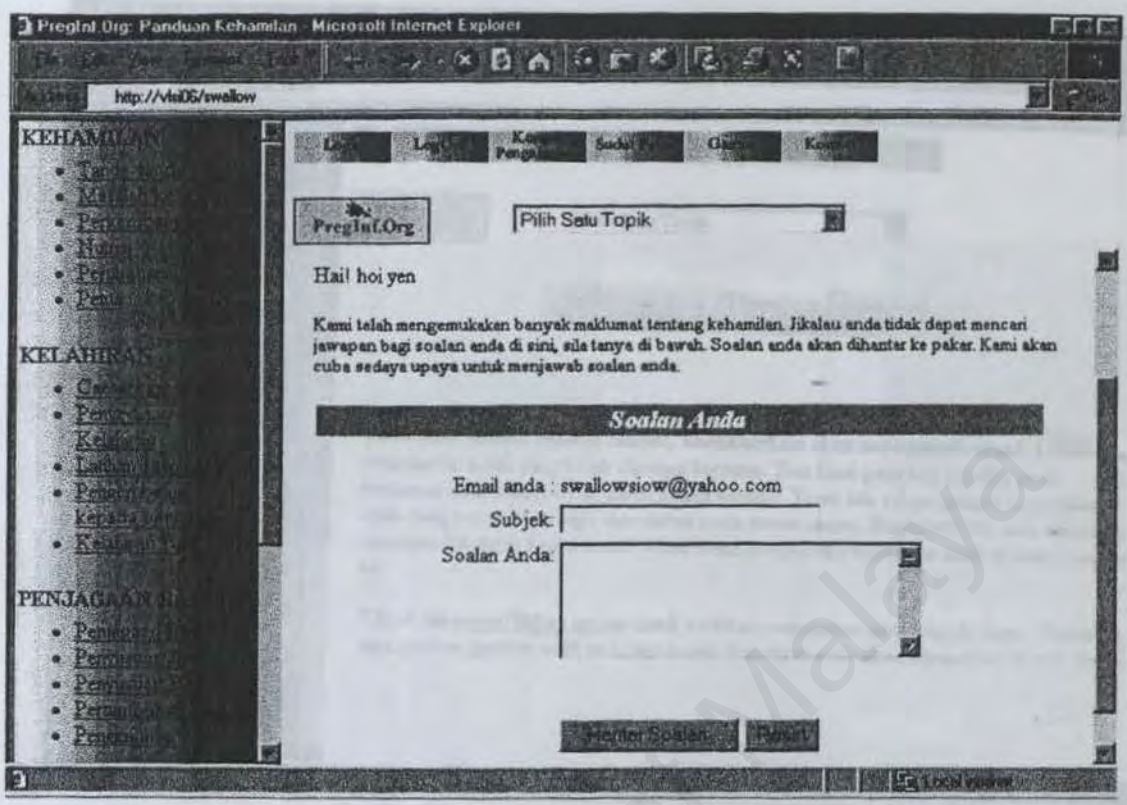

Figure 4.3 Asking Question's Form

4.4 Story Sharing Section

User can send their story to the Webmaster using this function, when the link petrel78@tm.net.my is clicked, Outlook Express will be launched in the PC.

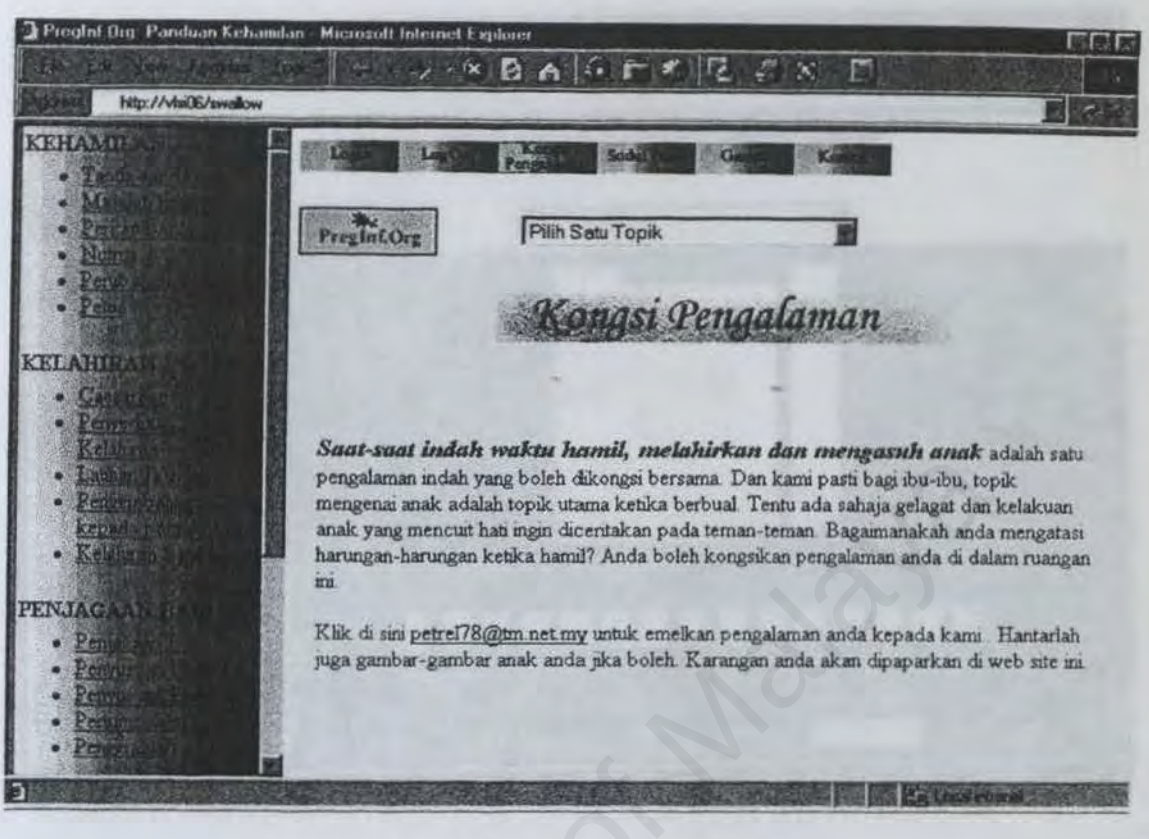

Figure 4.4 Story Sharing Section's Form

4.5 Games

This is a word guessing games called Hangman Games. Users just need to click the alphabet available in the web page to select. If game over, user can clicked on the button (Cuba Lagi!) to play it again. The words are mostly in Malay language and some of them are pregnancy related vocabularies.score will be calculated in the page.

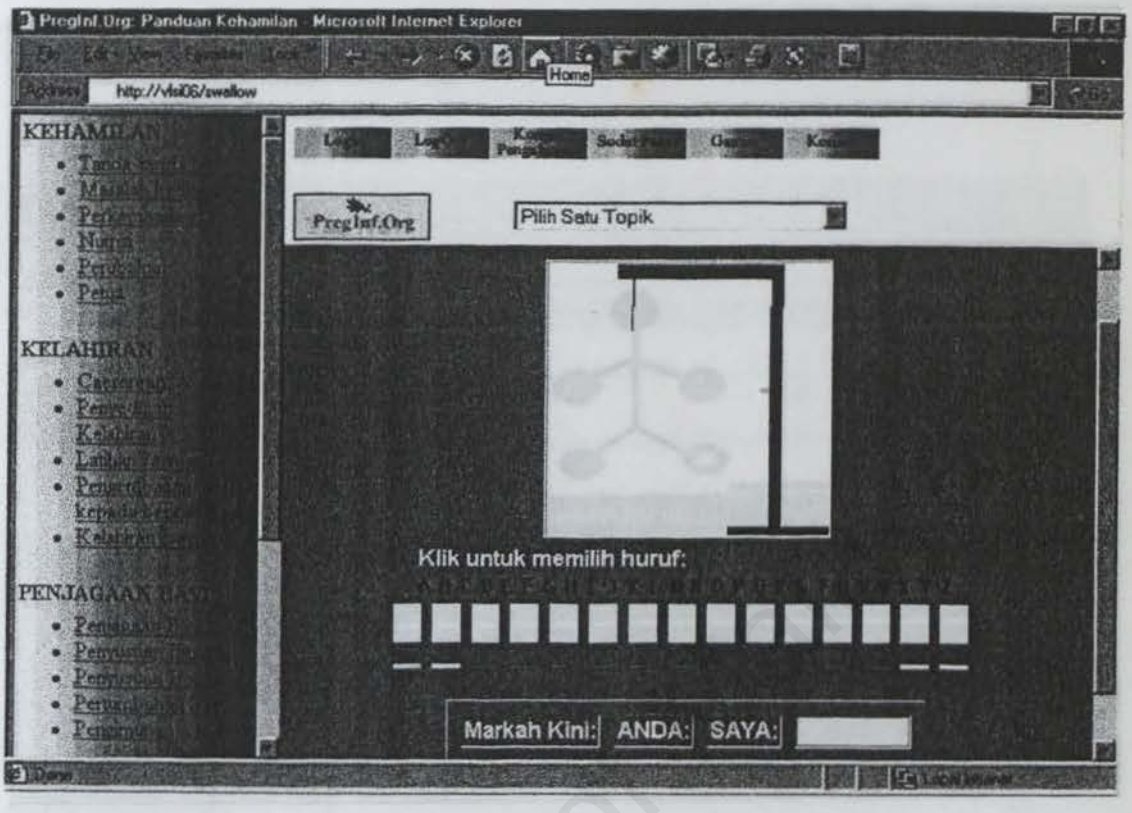

Figure 4.5(a) Hangman Games (New Games)

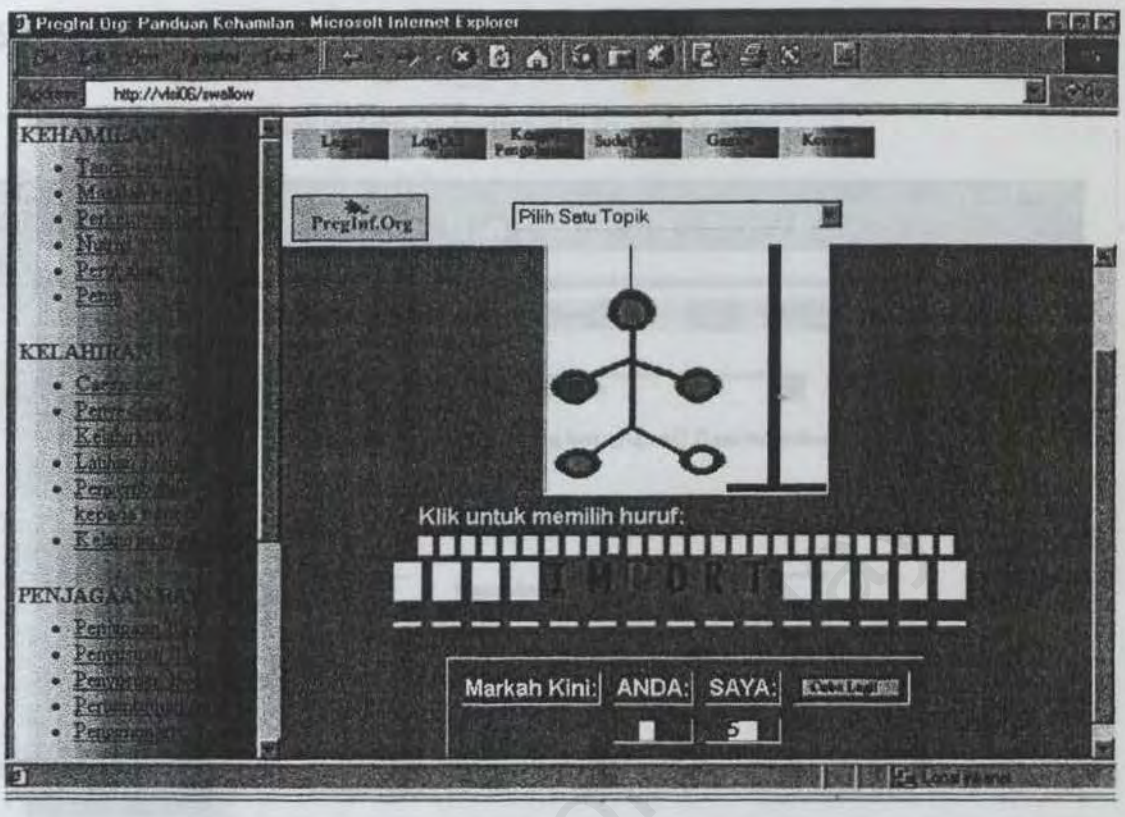

Figure 4.5(b) Hangman Games (Game Over, Try Again)

4.6 Comment

User can send their suggestion or comments to web master.

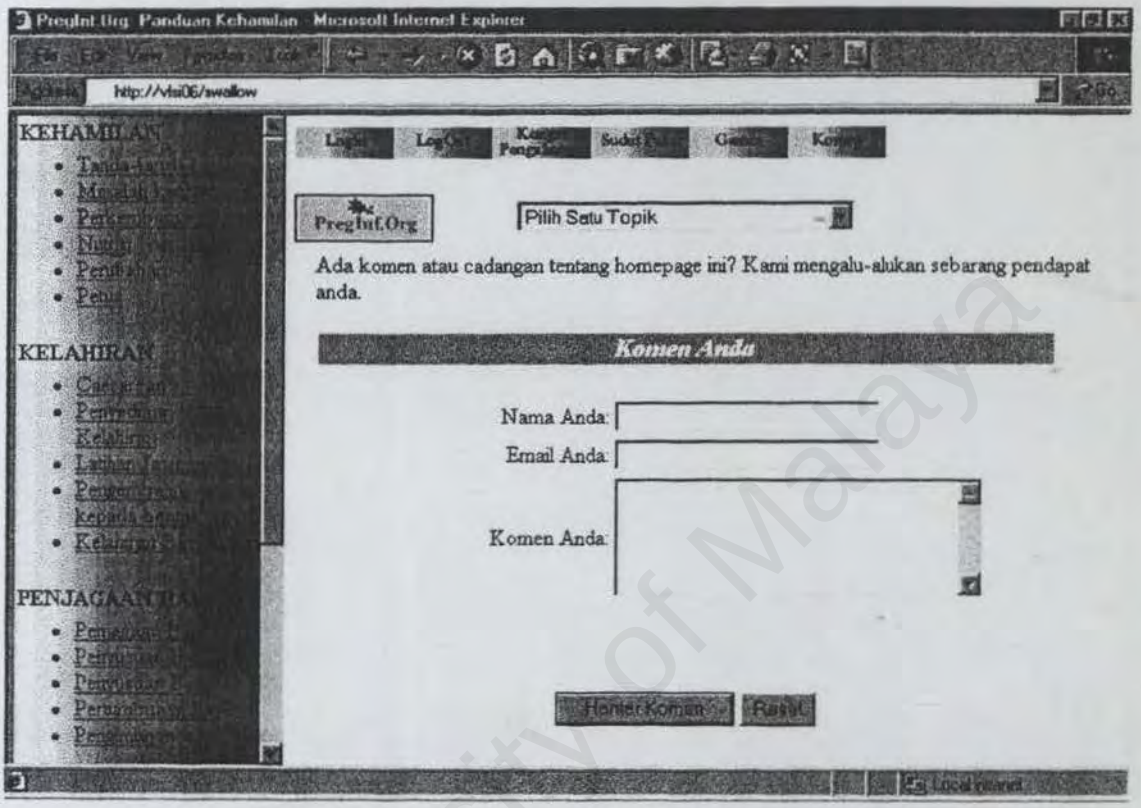

Figure 4.6 Comment's Form